BMT – Biomedical Technology/
Biomedical Engineering

PROGRAMME

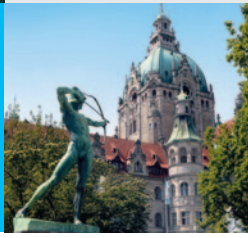
BMT 2014

48th DGBMT ANNUAL CONFERENCE
October 8-10, 2014

HANNOVER

Hannover Congress Centre (HCC)
Theodor-Heuss-Platz 1-3
30175 Hannover

www.bmt2014.de



Hannover Medical School

Sonderforschungsbereich 599
Biomedizintechnik

DGBMT GERMAN SOCIETY FOR BIOMEDICAL ENGINEERING WITHIN VDE

VDE

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Sonderforschungsbereich 599 Biomedizintechnik

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Greeting of the Conference Chairmen

Ladies and Gentlemen,

Collaborative Research Centre SFB 599 Biomaterial Engineering "Sustainable bioresorbable and permanent implants of metallic and ceramic materials" is an interdisciplinary research alliance between the Hannover Medical School (MHH), the Leibniz University Hannover, the University of Veterinary Medicine Hannover Foundation (TiHo), Laser Zentrum Hannover e.V. (LZH), Braunschweig Technical University and the Helmholtz Centre for Infection Research (HZI) in Braunschweig.

This alliance will be the host of the BMT 2014, the 48th annual conference of the German Society for Biomedical Engineering (DGBMT within VDE). Medical implants are the main focus of the conference and reflect the principal themes of the collective scientific institute of the academies of Hannover, NIFE – Lower Saxony Centre for Biomedical Engineering, Implant Research and Development. Fundamental research, applied research, clinical research and medical application on a high level represent the whole range of research and developmental processing in cooperation with worldwide leading industrial partners.

The venue of the German Society for Biomedical Engineering (DGBMT within VDE) is located at Hannover Congress Centre (HCC). Biomedical Engineering flourishes mainly due to the intensive communication network between the users, consisting of the clinical physicians, practitioners and the patients. Progress in the ever increasing complex environment of Biomedical Engineering is one of the topics of this conference.

We are honoured to introduce and welcome you to the BMT 2014 in Hannover.

Prof. Prof. h.c. Dr. med. Thomas Lenarz

Chairman Department of Otorhinolaryngology,
Hannover Medical School;
Chair of the DGBMT and Chair of the BMT 2014

Greeting of the Minister of Economic Affairs, Labor and Transportation for Lower Saxony

Ladies and Gentlemen,

It's a particular pleasure to welcome participants to the forty-eighth annual conference of the German Society for Biomedical Engineering (DGBMT) within VDE.

Lower Saxony has an exceptionally strong cross-disciplinary research infrastructure. Hannover in particular, this year's conference venue, offers an excellent medical technology location to stage the DGBMT annual conference at VDE on this year's principle topic, 'medical implants'.

Along with an excellence cluster two special research areas with a focus on biomedical technology have settled here in recent years: Since 2003 the special research area of Sustainable Bioresorbable and Permanent Implants of Metallic and Ceramic Materials (SFB 599) has been working as an alliance of several higher education facilities, universities and research centres. The second special research area addresses trans-regional and interdisciplinary cooperation with partners in Aachen, Rostock and Ulm under the name Transregio 37 – Micro- and Nanosystems in Medicine – Reconstruction of Biological Functions. Last not least, the excellence cluster From Regenerative Biology to Reconstructive Therapy (REBIRTH) is a further Lower Saxony research project in the field of biomedical technology. The aim of this cluster is to develop innovative therapy approaches for organ regeneration. The scientific strengths are concentrated at the Lower Saxony Centre for Biomedical Engineering, Implant Research and Development (NIFE).

In our efforts to support technology transfer from research to commercial applications, the State of Lower Saxony runs a central contact office for companies who wish to form a network or are looking to cooperate with research facilities, or who simply wish to keep informed about the latest trends and subsidy opportunities: BioRegioN, the Lower Saxony Innovation Network for Life Sciences.

And because of these many and varied opportunities offered by Lower Saxony's research infrastructure, in recent years a particularly attractive entrepreneurial community with a strong knowledge base has established itself here.

The growth potential in this field is very promising; demographic change, raised awareness of health issues and increasing prosperity all have a stimulating effect on this development, quite independently of the need to intensify and carry forward research in the field of medical implantology. In all our efforts we should constantly bear in mind that the main concern of modern medical implant technology is to help seriously ill and disabled people to play their part in society with a minimum of impairment and pain.

And in this spirit I wish the participants and organisers of this conference every success, many interesting encounters, and lively discussion that creates many new impulses for your important work!

With my best regards

Olaf Lies

Minister of Economic Affairs, Labor and Transportation
for Lower Saxony

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Organizers and Conference Venue

German Society for Biomedical Engineering (DGBMT) within VDE

The DGBMT promotes co-operation between scientists, engineers and physicians in the fields of research, development, application and teaching. It supports the exchange of knowledge between various disciplines of biomedical technology and seeks to accelerate the transfer of new technologies into medical application.

▸ www.vde.com/dgbmt

Hannover Medical School

The Hannover Medical School, founded in 1965, is one of the world's leading university medical centres. The research and patient care of the MHH set national and international standards. The MHH is also part of an excellent regional medical network. Its outstanding success in interdisciplinary collaboration both within the MHH and with extramural scientific institutions is reflected in the fact that the MHH is the German medical university with the greatest volume of grant funding.

▸ www.mh-hannover.de

SFB 599 – Sonderforschungsbereich 599 der DFG

▸ www.sfb599.de

Conference venue

Hannover Congress Centre (HCC)
Theodor-Heuss-Platz 1-3
30175 Hannover

Conference Organizing Committee & Programme Committee

Conference Organizing Committee

Thomas Lenarz, Hannover (Conference Chair)
Thorsten Buzug, Lübeck
Birgit Glasmacher, Hannover
Hansjörg Hauser, Hannover
Axel Haverich, Hannover
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Jörg Subke, Gießen
Olaf Such, Best
Gerald Urban, Freiburg
Hans-Jürgen Wildau, Berlin
Henning Windhagen, Hannover
Thomas Wittenberg, Erlangen
Walter Wrobel, Reutlingen

Opening Ceremony, Greeting and Main Speech

October 08, 2014, 18:15 – 19:30 h

18:15 h
OPENING
Prof. Prof. h.c. Dr. med. Thomas Lenarz
Chair of the DGBMT and
Chair of the BMT 2014

18:25 h
GREETINGS
Prof. Dr. med. Christopher Baum
President of the Hannover Medical School

18:35 h
GREETINGS
Olaf Lies
Minister of Economic Affairs, Labor and Transportation for Lower Saxony

18:50 h
MAIN SPEECH:
„VOM MATERIAL ZUM IMPLANTAT“
Prof. Dr.-Ing. Dr.-Ing. E.h. mult. Dr. med. Heinz Haferkamp
Institut für Werkstoffkunde, Leibniz Universität Hannover

19:20 h
AWARD OF THE KLEE-PRICE OF THE DGBMT
Prof. Dr. Olaf Dössel
Chairman of the Awards Committee

19:25 h
AWARD OF THE “PATIENTENSICHERHEIT IN DER MEDIZINTECHNIK” PRICE
Prof. Dr. Uvo Hölscher
Chairman of the Awards Committee

19:30 h
GET TOGETHER

October 08, 2014, 08:30 – 09:00 h

KEYNOTE

Medical Engineering: Intrinsic Interdisciplinarity and Future Tasks

Prof. Dr. Erich Wintermantel
Technische Universität München

October 08, 2014, 13:45 - 14:15 h

KEYNOTE

Cochlear Implants: Past and Current Challenges

Prof. Dr. Erwin Hochmair
MED-EL Medical Electronics, Innsbruck, Austria

October 09, 2014, 08:30 – 09:00 h

KEYNOTE

Cardiovascular Devices and Implants: Patient Customization and Biohybrid Approach

Prof. Dr. med.
Thomas Schmitz-Rode
Institute of Applied Medical Engineering, RWTH Aachen University

October 09, 2014, 13:45 – 14:15 h

KEYNOTE

FES-Supported Restoration of Movement: from Biological Bracing to Modulation of Central Neuronal Control Networks

Prof. DDr. Winfried Mayr
Center for Medical Physics and Biomedical Engineering, Medical University of Vienna

October 10, 2014, 08:30 – 09:00 h

KEYNOTE

Stent Technology - Innovations and Developments

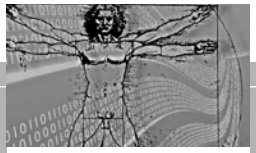
Prof. Dr.-Ing. habil.
Klaus-Peter Schmitz
University Rostock, Institute for Biomedical Engineering (IBMT)

October 10, 2014, 13:45 – 14:15 h

KEYNOTE

Medical Information Privacy in the Light of Big Data

Dr. Thilo Weichert
Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein (ULD), Kiel



October 08, 2014, 12:45 – 13:45 h, Blauer Saal

DGBMT members' meeting

Address
Hannover Congress Centrum (HCC), Roter Saal
Theodor-Heuss-Platz 1-3, 30175 Hannover

The technical and scientific work of the German Society for Biomedical Engineering (DGBMT) within VDE is carried out by its **technical committees and working groups**.

Here,

- doctors, engineers and scientists from
- hospitals, research institutes and companies

cooperate interdisciplinary and transdisciplinary. Work contents range from

- the exchange of knowledge and networking to
- planning and implementing events and
- drawing up studies and position papers.

Guests are cordially invited:
Take the opportunity to participate in an intensive technical dialogue at the meetings of the DGBMT Technical Committees taking place during the BMT 2014 in Hannover.

The **dates** for the meetings of the technical committees are listed in the current overview in your conference documents.

Vom 8. – 10. Oktober 2014 präsentiert sich das Junge Forum BMT gemeinsam mit der DGBMT im VDE e.V. und dem VDE YoungNet auf der Fachausstellung der BMT 2014 im Hannover Conference Centre (HCC).
Hier besteht die Möglichkeit sich über BMT-Studienmöglichkeiten sowie Karrierewege von BMT-Absolventen interaktiv zu informieren.

October 10, 2014, 14:30 – 16:00 h
Session: "Junges Forum trifft Alte Hasen"

Die Entwicklung der Hochfrequenzablation - Rückblick und Perspektiven

Eingeladener Gast:

Herrn Prof. Dr. rer. nat. habil
Bruno Ismer
Leiter des "Peter Osypka Institute for Pacing and Ablation" an der Offenburg University of Applied Sciences

14:30 – 14:55 h

Historie und Perspektiven der Hochfrequenz-Katheterablation

Bruno Ismer
Peter Osypka
Institute for Pacing and Ablation, Offenburg

14:55 – 15:10 h

Ablationsequipment – Herausforderungen für Medizintechnikstudenten

Tobias Haber
Institute for Pacing and Ablation, Offenburg

Peter Osypka

15:10 – 15:20 h

Kathetermaterial versus Läsionsgeometrie – Vom Wert des Goldes

Susanne Kirchner, Hans-Peter Nüdling*
Hochschule Offenburg, Stockert GmbH Freiburg*

15:30 – 16:00 h

Gemeinsame Diskussion

Organisatoren:
Dr.-Ing. Karsten Seidl, Dipl.-Ing. Stefanie Betancur,
Dr. Hanin Yeslam, Susanne Bradel

Further Education Event for Doctors at the BMT 2014

Certification of the lecture programme of the BMT 2014 – 48th DGBMT annual conference is granted by the Medical Association of Lower Saxony based on the current further training regulations of the Medical Association and the uniform assessment criteria.

According to **category B**, the conference is certified as an all-day or half-day event with parallel parts of event.

The following number of further **training points (FP**) can be awarded per day of the event:

October 08, 2014 – 6 FP
October 09, 2014 – 6 FP
October 10, 2014 – 6 FP

Registration numbers: 45796 - 45798

At the end of the respective conference day you will receive a **certificate of attendance**.

The organizer is responsible for the transmission of uniform numbers of further training for participants to the electronic information distribution list.
Participants are requested to independently register the further training points (FP) with the Medical Association of Lower Saxony after the conference.

Track Title Overview

A	Biomaterials and Biocompatibility
B	Biosensors and Bioanalytics
C	Biosignal Processing
D	Cellular, Tissue and Bioengineering
E	Clinical and Ambulatory Monitoring
F	Devices and Systems for Surgical Interventions
G	Home Health care and AAL
H	Image based Intervention
I	Imaging and Image Processing
J	Magnetic Methods in Medicine
K	Medical Information Systems, Telemedicine, eHealth, mHealth
L	Miscellaneous and Special Sessions
M	Modelling and Simulation
O	Prevention and Rehabilitation Engineering
P	Prosthetics and Implants
Q	Training and Further Education
R	Usability and Risk Management

Room: Niedersachsenhalle B

Keynote 1

08:30 **Medical Engineering: Intrinsic Interdisciplinarity and Future Tasks**
Prof. Dr. Erich Wintermantel, Technische Universität München

Professor Erich Wintermantel studied medicine at the University of Tübingen and was a visiting student with Prof. Yasargil, the founder of microneurosurgery at the University Hospital in Zürich from 1977 - 1981. Following his M.D Ph.D. thesis he was a research fellow at the University of Western Ontario in London, Canada (Prof. Charles Drake), the University of California Los Angeles (Prof. Bill House and House Ear Research Institute), the University of Montreal (Prof. Jules Hardy) and the University of Toulouse, France (Prof. Guy Lazorthes). After clinical training in neurosurgery with Prof. Loew in Homburg/Saar, in abdominal and orthopedic surgery at university hospitals in Germany, he joined the Swiss Federal Institute of Technology (ETH Zürich) in 1986 as senior assistant and scientific adjunct in mechanical engineering and lecturer in the design and manufacturing of medical implants and devices. He received his habilitation at ETH Zürich in 1991 in biomaterials science and engineering, and was an invited visiting scientist at the Massachusetts Institute of Technology (MIT) in 1991 and in 1992 working together with Professor Robert Langer in biomaterials developing novel degradable scaffolds for tissue engineering and drug release systems.

Erich Wintermantel became full Professor at ETH Zurich in 1992 as well as chairman of the Chair of Biocompatible Materials Science and Engineering and he served as Head of the ETH Institute of Construction and Design Engineering from 1995 - 2000. He joined the Technische Universität München (TUM) in 2000 for designing and building up the new Central Institute for Medical Engineering which he headed from 2000 - 2005 and he initiated the new Masters Curriculum in Medical Engineering at TUM, the first one of its kind on university level in Germany. Erich Wintermantel currently holds the Chair of Medical Engineering and is Head of the Institute for Medical and Polymer Engineering at TUM. (www.medtech.mw.tum.de)

09:00 - 09:15 Break

Room: Niedersachsenhalle B **Track I**

Imaging and Image Processing: Optical Coherence Tomography

Chairs: Edmund Koch (Technical University Dresden, DE); Thomas Schmitz-Rode (RWTH Aachen University, DE)

09:15 **Imaging of lung tissue dynamics during continuous artificial ventilation with Optical Coherence Tomography and Intravital Microscopy**
Christian Schnabel, Maria Gaertner, Lars Kirsten, Edmund Koch (Technical University Dresden, DE)

09:30 **High resolution frequency domain optical coherence tomography in the Vis-NIR spectral range**
Felix Köttig, Peter Cimalla, Maria Gaertner (Technical University Dresden, DE); Madalena Carido, Kai Postel, Marius Ader (Center for Regenerative Therapies Dresden, DE); Mike O. Karl (German Center for Neurodegenerative Diseases (DZNE) & Technical University Dresden, Center for Regenerative Therapies Dresden (CTRD), DE); Edmund Koch (Technical University Dresden, DE)

09:45 **Doppler optical coherence tomography for the investigation of the human tympanic membrane ex vivo**
Julia Walther, Anke Burkhardt, Lars Kirsten, Jonas Golde, Thomas Stoppe, Max Kemper, Matthias Bornitz, Thomas Zahnert, Edmund Koch (Technical University Dresden, DE)

10:00 **Dispersion Encoded Full Range Fourier Domain Optical Coherence Tomography for Image-Guidance of Fs-Laser Lens Surgery**
Ben Matthias, Tammo Ripken, Alexander Krüger (Laser Zentrum Hannover e.V., DE)

10:15 **Endoscopic optical coherence tomography for a handheld laryngoscope**
Alexander Krüger, Sabine Donner, Sebastian Bleeker, Tammo Ripken (Laser Zentrum Hannover e. V., DE)

10:30 **Optical Coherence Tomography (OCT) Guided Inner Ear Decalcification, Fast and Safe Method**
Saleh Mohebbi (TUMS & MHH, DE), Jesus Díaz Díaz (Leibniz University Hannover, DE); Mark Philipp Kühnel (Hannover Medical School & Institute of Functional and Applied Anatomy, DE); Martin Durisin, Thomas S. Rau (Hannover Medical School, DE); Marjan Mirsalehi (Tehran University of Medical Sciences & Hannover Medical School, DE); Tammo Ripken, Heiko Meyer (Laser Zentrum Hannover, DE); Thomas Lenarz, Omid Majdani (Hannover Medical School, DE)

10:45 - 11:15 Coffee break

Room: Bonatz Saal [in English or German] **Track B**

FS: Micro-Nano Technologies support Bio-Medicine

Chairs: Theodor Doll (Hannover Medical School, DE); Gerald Urban (University of Freiburg, DE)

09:15 **Microfluidic in vitro model of the blood-brain barrier: a biomimetic platform for drug development with active cell assembly**
Heiko Kiessling, Dorian Raible, Viktoria Rack, Britta Hagmeyer, Martin Stelzle, Julia Schütte (NMI Natural and Medical Sciences Institute at the University of Tuebingen, DE)

09:30 **BioMEMS for analysis and synthesis in life sciences**
Mike Stubenrauch, Stefan Hanitsch, Robert Fischer, Heike Bartsch, Anja Straube, Martin Hoffmann, Hartmut Witte (Ilmenau University of Technology, DE)

09:45 **Biocompatible and actuated Carbon Nanotube-based electrodes for advanced neural interfacing**
Katharina Tegtmeier, Jan Stieghorst, Pooyan Aliuos, Omid Majdani, Thomas Lenarz, Theodor Doll (Medical School Hannover, DE)

10:00 **Toward thin-film based high density hermetic feedthroughs for direct on die implementation**
Christian Bentler, Juan S. Ordonez, Martin Schuettler (University of Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE)

10:15 **Thermal stress in thin-film polyimide-based electrode arrays**
Juan S. Ordonez (University of Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE)

10:30 **Methods for modelling 3D cellular environments**
Andreas Schober (Ilmenau University of Technology, DE)

10:45 **Biofeedback - Smart Modality Fusion for Clinical, Home and Outdoor Health Monitoring**
Boudewijn Venema (Helmholtz Lehrstuhl für Biomedizinische Technik, RWTH Aachen University & Lehrstuhl für Medizinische Informationstechnik, DE)

10:45 - 11:15 Coffee break

Wednesday, October 8, 2014 • • 09:15 - 10:45

Room: Blauer Saal

VDE MedTech 2014 (1)
Das vernetzte Krankenhaus

09:30 **Begrüßung und Einleitung**
Prof. Prof. Dr. med. Thomas Lenarz, Direktor der HNO-Klinik an der MH Hannover, Vorsitzender der DGBMT im VDE e.V. und Mitglied des VDE Präsidiums

09:45 **Key-Note: Das vernetzte Krankenhaus – Chancen und Herausforderungen aus der Klinikperspektive**
Prof. Dr. med. Christopher Baum, Präsident der MH Hannover

10:15 **Key-Note: Das vernetzte Krankenhaus – Chancen und Herausforderungen aus der Industrieperspektive**
Dr. Arthur Kaindl, EO Imaging & Therapy Division SYNGO H IM SY, Siemens Healthcare Sector, Erlangen

10:45 - 11:15 Coffee break

Room: Roter Saal **Track A**

Biomaterials and Biocompatibility: Degradable Implantate auf der Basis von Polymeren und Metallen

Chair: Niels Grabow (University of Rostock, DE)

09:15 **Electrospinning of commercially available medical silicone rubber**
Miriam Haerst, Markus Ahrens, Vera Seitz, Erich Wintermantel (Technical University Munich, DE)

09:30 **Hydrogels with precisely nano-functionalized micro-topography for cell guidance**
Christoph Frey, Adria Sales (Max Planck Institute for Intelligent Systems, DE); Kiriaki Athanasopulu (Reutlingen University, DE); Joachim Spatz (Max Planck Institute for Intelligent Systems & Heidelberg University, DE); Ralf Kemkemer (Max Planck Institute for Intelligent Systems & Reutlingen University, DE)

09:45 **Experiments of Platelet Adhesion with the Stagnation Point Flow**
Klaus Affeld, Signý Stefánsdóttir, Jens Schaller, Ulrich Kertzscher (Charité - Universitätsmedizin Berlin, DE)

10:00 **Combination of drug delivery and stable biofunctionalization on biodegradable implant surfaces via layer by layer deposition**
Katharina Wulf, Sophie Schünemann, Kim Koeck, Klaus-Peter Schmitz, Katrin Sternberg, Svea Petersen (University of Rostock, DE)

10:15 **In-vivo-model to evaluate the suitability of a biodegradable magnesium alloy (MgYREZr) for intraarticular orthopedic implants**
Julia Diekmann, Andreas Weizbauer, Sylvie Bauer, Henning Windhagen (Hannover Medical School, DE); Arne Lucas (Syntellix AG, DE), Patrick Helmecke (Leibniz University Hannover, DE); Christoph Becher, Marco Ezechieli (Hannover Medical School, DE)

10:30 **Plasma nanofilms as biocompatible and antibacterial interface for biomaterials**
Michael Bergmann, Sebastian Lickert, Loïc Ledernez, Gregory Dame, Gerald Urban (University of Freiburg, DE)

10:45 - 11:15 Coffee break

Room: Konferenz Raum 7+9 **Track P**

FS: Tools and devices for Neurotechnology (BrainLinks-BrainTools Exzellenzcluster ExC 1086)

Chairs: Thomas Stieglitz (University of Freiburg; Institut für Mikrosystemtechnik, DE); Patrick Ruther (University of Freiburg, DE)

09:15 **Micro-optical implants for optogenetics**
Patrick Ruther, Michael Schwaerzle, Philipp Elmlinger, Linda Rudmann, Eva Fiedler, Juan S. Ordonez, Annik Jakob, Ulrich T. Schwarz, Oliver Paul (University of Freiburg, DE) and Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE)

09:30 **Active Neural Probes in CMOS Technology with Dense Electrode Arrangement for High-resolution Intracerebral Recording**
Oliver Paul, Tzeno Galchev, Abdelrahman Herbawi, Florian Larramendy, Patrick Ruther (University of Freiburg, DE)

09:45 **Smart Devices In Epilepsy Therapy: Animal Research For Closed-Loop Stimulation Devices**
Karin H Somerlik-Fuchs, Olaf Christ, Matthias Dümpelmann, Ulrich Hofmann (University Hospital Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE); Andreas Schulze-Bonhage (University Hospital Freiburg, DE)

10:00 **Can patients with brain implants undergo MRI?**
Erwin Fuhrer, Oliver G. Gruschke (University of Freiburg - IMTEK, DE); Matthias C. Wapler (University of Freiburg, DE); Mir Masoud Seyyed Fakhrabadi, Matthias Müller (University of Freiburg - IMTEK, DE); Katharina Göbel (University Hospital Freiburg, DE); Pierre LeVan (University Freiburg Medical Center, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE); Ulrike Wallrabe (University of Freiburg, DE); Jürgen Hennig (University Freiburg Medical Center, DE); Jan G. Korvink (University of Freiburg - IMTEK, DE)

Continue Track P next page

10:45 - 11:15 Coffee break

Continue Track P

10:15 **Cortical Recording and Stimulation Using a Wireless µECoG Implant System in a Large Animal Model**
C. Alexis Gkogkidis (University Medical Center Freiburg & University of Freiburg, DE); Xi Wang (University of Freiburg, DE); Mortimer Gierthmuehlen (University Hospital Freiburg, DE); Christian Henle (University of Freiburg, DE); Jörg Fischer (Institute for Biology, University of Freiburg & CorTec GmbH, DE); Fabian Kohler (University of Freiburg & IMTEK, DE); Jörg Haberstroh (University Hospital Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE); Martin Schuettler (University of Freiburg, DE); Joern Rickert (CorTec GmbH, Freiburg & Bernstein-Center, University of Freiburg, DE); Katharina Foerster (University Hospital Freiburg, DE); Tonio Ball (Epilepsiezentrum am Universitätsklinikum Freiburg, DE)

10:30 **An Augmented Reality Approach for BCI Control of Intelligent Autonomous Robots**
Lukas D.J. Fiederer (University Hospital Freiburg, DE); Thomas Lampe (University of Freiburg, DE); Martin Völker (University Hospital Freiburg, DE); Luciano Spinello, Wolfram Burgard, Martin Riedmiller (University of Freiburg, DE); Tonio Ball (Epilepsiezentrum am Universitätsklinikum Freiburg, DE)

10:45 - 11:15 Coffee break

Wednesday, October 8, 2014 • • 09:15 - 10:45

Room: Konferenz Raum 8+10 **Track C**

Biosignal Processing (1): Methods and Applications

Chairs: Karin Schiecke (University of Jena, DE); Reinhold Orglmeister (Technical University Berlin, DE

09:15 **Signal Adaptive Granger Causality based on Empirical Mode Decomposition**
Lutz Leistritz (Jena University Hospital & Friedrich Schiller University Jena, DE); Herbert Witte (Friedrich Schiller University Jena, DE)

09:30 **Implementation of Phase-to-Amplitude Coupling Analysis Algorithms in Deep Brain Stimulation Devices**
Damián Dellavale (Conicet, ARG); Markus Kock, Holger Blume (Leibniz University Hannover, DE); Mesbah Alam, Kerstin Schwabe, Joachim Krauss (Hannover Medical School, DE)

09:45 **Incremental Parameter Adaptation Scheme for Myoelectric-Controlled Human-Machine Interfaces**
Michele Tuga (Karlsruhe Institute of Technology & Institute for Applied Computer Science / Automation, DE); Ruediger Rupp, Andreas Kogut (Heidelberg University Hospital, DE); David Liebetanz, Leonie Schmalfuß (Georg-August-University Goettingen, DE); Ralf Mikut, Markus Reischl (Karlsruhe Institute of Technology, DE)

10:00 **Comparison of Different Compression Schemes for Neural Spike Signals**
Ulrich Bihr (Institute of Microelectronics, University of Ulm, DE); Michael Haas, Jens Anders, Maurits Ortmanns (University of Ulm, DE)

10:15 **Towards Identification of Functional Autonomic Network Structures: Sensitivity and Reproducibility**
Andy Schumann, Franziska Brünner, Susann Scharbrodt, Karl Jürgen Bär (University Hospital Jena, DE)

10:30 **Local activation time based estimation of the direction of propagation of plane wave and the corresponding conduction velocity in simulated electrograms**
Markus Rottmann, Tobias Oesterlein, Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

10:45 **On the use of Schrödinger's equation for ECG waveform analysis**
Thomas Schanze (Technische Hochschule Mittelhessen- University of Applied Sciences, DE)

10:45 - 11:15 Coffee break

Room: Konferenz Raum 11+13 [in German] **Track R**

Usability and Quality Control for Medical Technology

Chairs: Werner Korb (Hochschule für Technik, Wirtschaft und Kultur (HTWK) Leipzig, DE), Wolfgang Lauer (Federal Institute for Drugs and Medical Devices (BfArM), DE)

09:15 **Development of a test bench for fatigue strength determination of surgical implants incorporated with magnetic nanoparticles**
Andreas Ritter, Thomas Schmitz-Rode, Martin Baumann, Ioana Slabu (RWTH Aachen University, DE)

09:30 **Experimental Investigations on Medical Devices for the Development of a Non-Destructive Quality Control**
Thomas Pollack, Hermann Seitz (University of Rostock, DE)

09:45 **IT-based risk identification: Dynamic data presentation and text mining based classification**
Robin Seidel, Klaus Liebl (Federal Institute for Drugs and Medical Devices BfArM & Research Division, DE); Wolfgang Lauer (Federal Institute for Drugs and Medical Devices (BfArM), DE)

10:00 **Bugs! iPad-Hygiene in Healthcare**
Tobias Jungnickel, Ute von Jan, Karolin Graf, Ralf-Peter Vonberg, Urs-Vito Albrecht (Hannover Medical School, DE)

10:15 **User centered design of a pain assessment app according to IEC 62366**
Christoph Buckler, David Detzler, Alexander Steffen, Isabelle Schacht (Ergosign GmbH, DE)

10:30 **Chunk Controls - An Approach to Increase Usability In The OR**
Anna-Maria von Saucken (Medizintechnik Technische Universität Berlin & Prometei, DE); Jochen Prümper (HTW Berlin, DE); Marc Kraft (Technical University Berlin, DE); Bettina Seifert (Institute of Psychology and Ergonomics, Technical University Berlin, DE)

10:45 - 11:15 Coffee break

Wednesday, October 8, 2014 • • 09:15 - 10:45

Room: Konferenz Raum 12+14 [in German] **Track E**

Clinical and Ambulatory Monitoring (1)

Chairs: Hartmut Gehring (University of Luebeck; Universitätsklinikum Schleswig-Holstein, DE); Jens Muehlsteff (Philips Research, NL)

09:15 **Automatic segmentation of atelectasis in thorax CT correlates to PaO2/FiO2 ratio in ARDS patients**
Xueting Wang, Weiling Pan, Li Feng (PLA 148th Hospital, CHN); Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE); Zhanqi Zhao (Furtwangen University, DE)

09:30 **Influence of lung damage and hemodynamics on carbon dioxide equilibration after alterations in the respiratory rate**
Sarah Bühler (Division of Experimental Anesthesiology , Department of Anesthesiology and Intensive Care Medicine, DE); Sara Lozano-Zahonero, Hanna Runck, Katharina Gamerdinger, Katharina Foerster, Jörg Haberstroh (University Hospital Freiburg, DE); Stefan Schumann (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, DE); Josef Guttmann (University Hospital Freiburg, DE)

09:45 **Tremor and Stimulation Current in DBS: Intraoperative Analysis Using Accelerometer-Equipped Smartphone**
Igor Fischer, Maria Fischer, Stefan Groiss, Lars Wojtecki (Heinrich-Heine University, DE); Hans-Jakob Steiger, Jan Vesper (University Hospital Duesseldorf, DE)

10:00 **Inductive sensor for measurement of soft tissue strain**
Robert Wendlandt, Christian Schütt (University Medical Center Schleswig-Holstein, DE); Klaus Seide (Berufsgenossenschaftliches Unfallkrankenhaus Hamburg, DE); Arndt Schulz (University Medical Center Schleswig-Holstein, DE)

10:15 **Evaluation of the Emotiv EPOC EEG for pain detection**
Lennart Moldenhauer, Judith Flock, Hoc Khiem Trieu (Hamburg University of Technology, DE)

10:30 **Development and testing of a robust sensor system for home care measurement of physical activity and knee joint motion**
Frank Feldhege (Rostock University Medical Center, DE); Tobias Lindner (University of Rostock, DE); Anett Mau-Möller (Rostock University Medical Center, DE); Albert Hein, Thomas Kirste (University of Rostock, DE); Uwe Zettl (Rostock University Medical Center, DE); Rainer Bader (University of Rostock, DE)

10:45 - 11:15 Coffee break

Room: Runder Saal

Poster Session Tracks D, B, F, LUMEN

Chair: Gerald Urban (University of Freiburg, DE)

Room: Runder Saal 09:15 - 09:47 **Track D**

Poster Session: Cell-, Tissue- & Bioengineering

P-D 01
09:15 **Comparison of three active humidifiers for re-establishing of saturation in carbon dioxide incubators**
Matthias Schuh, Jr., Johannes Gattinger, Sven Grob, Sonja Seitz, Markus Schönberger, Markus Eblenkamp, Erich Wintermantel (Technical University Munich, DE)

P-D 02
09:19 **Processing of nanoparticles in organism - further develpoment of the breast cancer SNLB-concept using SPIOs and MPI**
Dominique Finas (University of Luebeck & Evangelisches Krankenhaus Bielefeld, DE); Kristin Baumann, Janine Stegmann-Frehse, Ksenija Gräfe, Achim Rody, Thorsten M. Buzug, Kerstin Lüdtke-Buzug (University of Luebeck, DE)

P-D 03
09:23 **Patient-customized tissue-engineered vascular grafts: the optimization of the production process**
Frederic Wolf, Sabine Koch (Helmholtz Institute for Biomedical Engineering, RWTH Aachen University, DE); Valentine Gesché, Philipp Schuster, Julia Frese (RWTH Aachen University, DE); Christian Brecher, Werner Herfs (Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen, DE); Thomas Schmitz-Rode, Petra Mela (RWTH Aachen University, DE); Stefan Jockenhoevel (RWTH Aachen University & Helmholtz Institute for Biomedical Engineering, DE)

P-D 04
09:27 **The effect of different pressure gradients on angiogenesis in the CapNet system**
Franziska Kreimendahl (RWTH Aachen University, DE); Stefan Weinandy (Tissue Engineering, AME, RWTH Aachen University Hospital, DE); Julia Frese, Luis Gerardo Hurtado Aguilar, Michael Vogt (RWTH Aachen University, DE); Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

10:45 - 11:15 Coffee break

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P-D 05
09:31 **Comparison of the repair potential of intravenous versus direct adipose-derived mesenchymal stromal cell (ASC) delivery into rats after peripheral nerve injury**
Stefanie Michael, Claas-Tido Peck, Kerstin Reimers, Peter Vogt, Christine Radtke, Desiree Schröder (Hannover Medical School, DE)

P-D 06
09:35 **Development and characterization of a decellularised xenogeneic mitral valve scaffold**
Marisa Granados, Lucrezia Morticelli, Pavel Yablonski, Andres Hilfiker, Igor Tudorache, Serghei Cebotari, Axel Haverich, Sotirios Korossis (Hannover Medical School, DE)

P-D 07
09:39 **Development of an observation-window for intravital fluorescent microscopically observation of femoral defects in rat**
Felicitas Miller, Andreas Kampmann, Kerstin Reimers, Sarah Strauß, Thomas Aper, Matthias Wilhelmi, Peter Vogt, Frank Tavassol, Nils-Claudius Gellrich (Hannover Medical School, DE)

P-D 08
09:43 **Electroporation of cells: It's more than field strength (E)**
Andreas Ritter (RWTH Aachen University, DE); Daniel Busch, Sarah Hilswicht (RWTH Aachen University Hospital, DE); Aldag Pierre (RWTH Aachen University, DE); Marcel Binnebösel, Ulf Neumann, Anne Eßer (RWTH Aachen University Hospital, DE); Martin Baumann (RWTH Aachen University, DE)

Room: Runder Saal 09:47 - 10:03 **Track B**

Poster Session: Biosensors and Bioanalytics

P-B 01
09:47 **Detection of thermally induced denaturation of muscle tissue by impedance spectroscopy**
Marco Bellof, Mark Ulbrich, Steffen Leonhardt (RWTH Aachen University, DE)

10:45 - 11:15 Coffee break

P-B 02
09:51 **Development of a microchip based cell sorting device**
Stefan Kahnert (Fraunhofer IMS, DE), Klaus Lennartz, Uwe Kirstein (Uniklinik Essen, DE), Fedor Schreiber, Daniel Erni (University of Duisburg-Essen, DE), Andreas Goehlich (Fraunhofer Institute of Microelectronic Circuits and Systems, DE), Holger Vogt (Fraunhofer IMS, DE); Dieter Greifendorf (Fraunhofer Institute for Microelectronic Circuits and Systems, DE), Bastian Goellner, Frank Bartels (Bartels Mikrotechnik, DE); Andre Rennings (University of Duisburg-Essen, DE); Ulrike Michelsen (Bartels Mikrotechnik GmbH, DE)

P-B 03
09:55 **CMOS integrated biosensor for the detection of biomarkers**
Kim Burmester, Andreas Goehlich, Yusuf Celik (Fraunhofer Institute for Microelectronic Circuits and Systems, DE); Radostina Manova (University of Wageningen, NL); Luc Scheres, Esther Roeven, Anke Trilling (Surfix, NL); Andreas Schmidt, Ulrike Hutten, Katrin Neureiter (Fraunhofer Institute for Microelectronic Circuits and Systems, DE); Sebastien Pierrat (Fraunhofer IMS, DE); Teris van Beek (University of Wageningen, NL); Holger Vogt (Fraunhofer IMS, DE)

Room: Runder Saal 10:00 - 10:32 **Track** F

Poster Session: Devices and Systems for Surgical Interventions

P-F 01
10:00 **Characterisation of mechanical properties of vascular catheters**
Axel Boese, Johannes Hedwig, Georg Rose, Thomas Hoffmann, Martin Skalej (Otto-von-Guericke-University Magdeburg, DE)

P-F 02
10:04 **Diamond-like carbon coating for highly precise and biocompatible optical markers for surgical navigation**
Simone Hemm-Ode (University of Applied Sciences Northwestern Switzerland & School of Life Sciences, CH); Sandro Fabbri, Michael de Wild (University of Applied Sciences Northwestern Switzerland, CH); Bruno Knobel, Charles Findeisen (Naviswiss AG, CH); Erik Schkommodau (University of Applied Sciences Northwestern Switzerland, CH)

10:45 - 11:15 Coffee break

P-F 03
10:08 **Approach to the detection of the use of medical devices based on the analysis of video streams**
Max Rockstroh, Marco Wittig (Innovation Center Computer Assisted Surgery, University Leipzig, DE); Stefan Franke, Thomas Neumuth (University Leipzig, DE)

P-F 04
10:12 **Development of an experimental test-setup for analysis of the expansion behavior of a novel concept for callus formation**
Cathérine Ebner, Jan Wieding (University of Rostock, DE); Carolin Gabler (University Medicine Rostock, DE); Matthias Militz, Markus Oehlbauer (BGU Murnau, DE); Christoph Miethke (Fa. Miethke, DE); Rainer Bader (University of Rostock, DE)

P-F 05
10:16 **Automatized Production of Scaffolds for Heart Valve Tissue Engineering**
Anna Lena Hoheisel, Holger Zernetsch, Birgit Glasmacher (Leibniz University Hannover, DE)

P-F 06
10:20 **Quantification of Hepatic Steatosis using NIR Spectroscopy - Results of an in vivo Study on Rats**
Martin Hoffmann (fzmb GmbH - Forschungszentrum für Medizintechnik und Biotechnologie, DE); Stephanie Liebold (FZMB Bad Langensalza, DE); Matthias Lange, Florian Meuche, Petra Prokop (fzmb GmbH, DE); Wei Weiwei, Uta Dahmen (University Hospital Jena, DE)

P-F 07
10:24 **Planar Resonant Markers Fabricated using Thick-Film Hybrid Technology**
Mandy Kaiser, Markus Detert (Otto-von-Guericke University Magdeburg, DE); Marco Luniak (Technical University Dresden, DE); Bertram Schmidt, Georg Rose (Otto von Guericke University Magdeburg, DE)

P-F 08
10:28 **Piezo Stepping Actuator for Biomedical Applications**
Peter Pott, Alvaro Carrasco (Institut für Elektromechanische Konstruktionen, Technical University Darmstadt, DE) , Helmut F. Schlaak (Technical University Darmstadt, DE)

10:45 - 11:15 Coffee break

Room: Runder Saal 10:32 - 10:45 **Track L**

FS: LUMEN - Luebeck Medical Engineering. A joint research project for innovative methods in measuring and modelling vascular parameters for diagnostics and therapy

P-LUMEN 01
10:32 **Drug release from bone implants: a phenomenological modeling approach**
Jan Krieger (Luebeck University of Applied Sciences & Medical Sensors and Devices Laboratory, DE); Tobias F. Klepsch (Luebeck University of Applied Sciences, DE); Tobias Wenzel, Christian Damiani, Stephan Klein (Luebeck University of Applied Sciences, DE)

P-LUMEN 02
10:35 **Modeling diffusion of gentamicin eluted from a coated intramedullary nail**
Tobias F. Klepsch (Luebeck University of Applied Sciences, DE); Gereon Rau (Christian-Albrechts-University Kiel, DE); Jan Krieger (Luebeck University of Applied Sciences & Medical Sensors and Devices Laboratory, DE); Henrik Botterweck (Luebeck University of Applied Sciences, DE)

P-LUMEN 03
10:38 **A physical model of perfused, pulsating tissue compartments - Design concept**
Benjamin Weber, Vincent Hennicke, Bodo Nestler (Luebeck University of Applied Sciences, DE)

P-LUMEN 04
10:41 **A Portable In-Ear Pulse Wave Measurement System**
Roman Kusche (Luebeck University of Applied Sciences & Laboratory for Medical Electronics, DE); Ankit Malhotra, Martin Ryschka, Steffen Kaufmann (Luebeck University of Applied Sciences, DE)

10:45 - 11:15 Coffee break

Room: Niedersachsenhalle B **Track I**

Imaging and Image Processing: Image Analysis and processing (1)

Chairs: Hartmut Dickhaus (University of Heidelberg, DE); Thorsten Buzug (University of Lübeck, DE)

11:15 **Chromatically encoded high-speed photography for the analysis of cavitation bubble oscillation inside inhomogeneous ophthalmic tissue**
Nadine Tinne, Sonja Veith, Raoul Lorbeer, Alexander Krüger, Tammo Ripken (Laser Zentrum Hannover e. V., DE)

11:30 **Eyelid Detection in Eye-Tracking Experiments**
Jörg Nagel (Karlsruhe Institute of Technology, DE); Peter Hevesi (German Research Center for Artificial Intelligence (DFKI), DE); Christoph Beck, Ulrich Gengenbach, Georg Bretthauer (Karlsruhe Institute of Technology, DE)

11:45 **Echo State Networks for Granulopoietic Cell Recognition in Histopathological Images of Human Bone Marrow**
Philipp Kainz, Michael Mayrhofer-Reinhartshuber (Medical University of Graz, AUT); Harald Burgsteiner (Graz University of Applied Sciences, AUT); Martin Asslaber, Helmut Ahammer (Medical University Graz, AUT)

12:00 **Measurement of ex vivo porcine lens shape during simulated accommodation before and after fs-laser treatment**
Jan Hahn (Laser Zentrum Hannover e. V., DE); Michael Fromm (ROWIAK GmbH, DE); Silke Besdo (Leibniz University of Hannover, DE); Holger Lubatschowski (ROWIAK GmbH, DE); Alexander Krüger, Tammo Ripken (Laser Zentrum Hannover e.V., DE)

12:15 **Continuously monitoring regional ventilation distribution in lavage ARDS pigs under high frequency oscillatory ventilation**
Songqiao Liu (School of Medicine, Southeast University & Zhongda Hospital, CHN); Zhanqi Zhao (Furtwangen University, DE); Li Tan, Yingzi Huang, Ling Liu, Lihui Wang, Jianfeng Xie, Jingyuan Xu, Chun Pan, Yi Yang, Haibo Qiu (School of Medicine, Southeast University, CHN); Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE)

12:30 **Elastosonography and elastic modulus in healthy young heel pads**
Sara Matteoli (University of Florence, ITA); Leonardo Forzoni (Esaote S.p.A., ITA); Federica Vannetti (Don Carlo Gnocchi Foundation, IRCCS, IAT); Antonio Virga, Andrea Corvi (Università degli Studi di Firenze, ITA); Raffaele Molino-Lova (2Don Gnocchi Foundation, Rehabilitation Center IRCSS, ITA)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Bonatz Saal **Track M**

SFB 599: Modelling und Simulation

Chairs: Bernd-Arno Behrens, Peter Wriggers (Leibniz University Hannover, DE)

11:15 **Finite element simulations for development of cardio-vascular implants to support biological grafts**
Martin Weidling, Silke Besdo (Leibniz University Hannover, DE); Tobias Schilling (Hannover Medical School, DE); Michael Bauer, Thomas Hassel, Friedrich-Wilhelm Bach, Hans Jürgen Maier, Peter Wriggers (Leibniz University Hannover, DE); Axel Haverich (Hannover Medical School, DE)

11:30 **Wear simulation and wear testing of simplified ceramic knee implant components**
Anke Müller (Leibniz University Hannover); Christian Heller, Jens Köhler (Leibniz University Hannover, DE); Manuel Krämer, Bastian Welke, Christof Hurschler (Hannover Medical School & Laboratory for Biomechanics and Biomaterials, DE); Amer Almohallami, Anas Bouguecha, Bernd-Arno Behrens, Berend Denkena (Leibniz University Hannover, DE)

11:45 **Intramedullary nails out of magnesium alloy: a finite element study**
Silke Besdo, Mariella Hüls, Marcel Kluge (Leibniz University Hannover, DE); Christina Rössig, Nina Angrisani (University of Veterinary Medicine Hannover, Foundation, DE); Peter Wriggers (Leibniz University Hannover, DE); Janin Reifenrath (University of Veterinary Medicine Hannover, DE)

12:00 **Early public relations of research groups to facilitate industrial partnering for future translation activities**
Tobias Schilling, Manfred Elff, Axel Haverich (Hannover Medical School, DE)

12:15 **Canine Hip-Joint Forces: Model Development and Calculation by means of Multi-Body Simulation**
Stefanie Betancur Escobar (Leibniz University Hannover & Institute for Metal Forming and Metal Forming Machine, DE); Karin Lucas (University of Veterinary Medicine Foundation Hannover, DE); Iryna Kovalova (Leibniz Universität Hannover, DE); Ingo Nolte (University of Veterinary Medicine Hannover); Bernd-Arno Behrens (Leibniz University Hannover, DE)

12:30 **Model-based Monitoring of Hip Prosthesis Vibrations for Loosening Detection**
Uwe Marschner, Sebastian Sauer, René Körbitz, Eric Starke, Wolf-Joachim Fischer (Technical University of Dresden, DE); Bernhard Clasbrummel (Chirurgische Privatpraxis Bernhard Clasbrummel, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Blauer Saal

VDE MedTech 2014 (2)
Das vernetzte Krankenhaus

11:15 **Klinikinformationsmanagement: Trends und Herausforderungen**
Dirk May, Leiter des Zentrums für Informationsmanagement, MH Hannover

11:45 **Klinikinformationsmanagement: Integrationsszenarien und Herausforderungen**
Matthias Meierhofer, Gründer und Vorstandsvorsitzender Meierhofer AG, München

12:15 **Vernetzte Medizintechnik im Krankenhaus: Anwendung und Betrieb**
Prof. Dr. Björn Bergh, Direktor Zentrum für Informations- und Medizintechnik, Universitätsklinikum Heidelberg

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Roter Saal **Track I**

DGMP Session

Chair: Martin Völker (Deutsche Gesellschaft für Medizinische Physik e.V.)

11:15 **Technological challenges in particle beam therapy**
Wolfgang Enghardt (Technische Universität Dresden, DE)

11:30 **Personendosimetrie: Möglichkeiten und Herausforderungen**
Markus Borowski (Klinikum Braunschweig, DE)

11:45 **Fortschritte in der Computertomographie – Bildqualität und Strahlenexposition**
Martin Fiebich (Technische Hochschule Mittelhessen, DE)

12:00 **Monte Carlo Simulationen – ein universelles Werkzeug der Medizinischen Physik**
Klemens Zink (University of Applied Sciences Gießen, DE)

12:15 **Computational MRI – Analyse der kardialen Perfusions-MRT mittels strömungsmechanischer Simulationen**
Laura M. Schreiber (Johannes Gutenberg University Medical Center, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Wednesday, October 8, 2014 • • 11:15 - 12:45

Room: Konferenz Raum 7+9 **Track A**

DGBM Session

Chair: Regine Willumeit (Helmholtz-Zentrum Geesthacht, DE)

11:15 **Bone regeneration with biomaterials and stem cells**
Anita Ignatius (University Ulm, DE)

11:35 **Biopolymer hydrogels for embedding of living cells and biofabrication of complex tissue equivalents by 3D plotting**
Anja Lode, Kathleen Schütz, Anna-Maria Placht, Ashwini Rahul Akkineni, Birgit Hoyer, Stefan Scheurer, Michael Gelinsky (Technical University Dresden, DE)

11:55 **Vascular medical devices & biotechnology: new perspectives by xNA-based surface functionalizations**
Hans Peter Wendel (University Tuebingen, DE)

12:15 **Application of electrospun piezoelectric PVDF-scaffolds for nerve regeneration**
Fedaa Al Halabi, Peter Behrens (Institute for Multiphase Processes, University of Hannover, DE); Birgit Glasmacher (Leibniz University Hannover, DE)

12:25 **Evaluation of cell viability and functionality in fresh explanted and incubated porcine arteries for investigation in a perfusion culture system**
Andreas Rudolph, Thomas Eickner (Rostock University Medical Center, DE); Katrin Sternberg (University of Rostock, DE); Thomas Noack (Rostock University Medical Center, DE); Klaus-Peter Schmitz (University of Rostock, DE); Marina Hovakimyan (Rostock University Medical Center, DE)

12:35 **Linker-mediated attachment of switchable, drug delivering hydrogels to structured surfaces**
Ingo Minrath, Olga Sahmel, Rosa-Louisa Weiß, Klaus-Peter Schmitz, Katrin Sternberg, Svea Petersen (University of Rostock, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Konferenz Raum 8+10 **Track C**

FS: Biosignalanalyse in der Schlafforschung

Chairs: Thomas Penzel (Charité - Universitätsmedizin Berlin, DE), Thomas Schanze (Technische Hochschule Mittelhessen-University of Applied Sciences, DE)

11:15 **Influence of controlled sleep deprivation on the HRV**
Martin Glos, Ingo Fietze, Alexander Blau, Thomas Penzel (Charité - Universitätsmedizin Berlin, DE)

11:30 **Symbolic Coupling Traces during arousals**
Andreas Mueller, Maik Riedl, Jan F Kraemer (Humboldt University Berlin, DE); Thomas Penzel (Charité - Universitätsmedizin Berlin, DE); Juergen Kurths, Niels Wessel (Humboldt University Berlin, DE)

11:45 **Increased cardio-respiratory coordination in sleep apnoeas**
Maik Riedl, Andreas Mueller, Jan F Kraemer (Humboldt University Berlin, DE); Thomas Penzel (Charité - Universitätsmedizin Berlin, DE); Juergen Kurths, Niels Wessel (Humboldt University Berlin, DE)

12:00 **Estimation of ECG Derived Respiratory Power for Apnea Detection**
Jan F Kraemer (Humboldt University Berlin, DE); Thomas Penzel (Charité - Universitätsmedizin Berlin, DE); Indira Gurubhagavatula (University of Pennsylvania, USA); Niels Wessel (Humboldt Berlin, DE)

12:15 **Determination of uncertainty of the starting and ending time of manually scored EEG arousals with K means clustering**
Dennis Lerch, Reinhold Orglmeister (Technical University Berlin, DE); Thomas Penzel (Charité - Universitätsmedizin Berlin, DE)

12:30 **Feature Selection for Sleep Analysis using Heart Rate Variability and fMRI Functional Connectivity**
Sebastian Zaunseder, Marko Lehmann (Technical University Dresden, DE); Enzo Tagliazucchi (Goethe University, DE),; Helmut Laufs (University Hospital Schleswig Holstein, DE); Hagen Malberg, Michael Marxen (Technical University Dresden, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Wednesday, October 8, 2014 • • 11:15 - 12:45

Room: Konferenz Raum 11+13 **[in German]** **Track Q**

Training and Simulation (Simulations- und Trainingssysteme) (1)

Chairs: Werner Korb (Hochschule für Technik, Wirtschaft und Kultur (HTWK) Leipzig, DE); Ute Morgenstern (Technical University Dresden, DE)

11:15 **Medical device incidents reported to the BfArM - What do they tell us about deficiencies in instruction and training for medical device use?**
Miriam Nowak, Kathrin Lange, Wolfgang Lauer (Federal Institute for Drugs and Medical Devices (BfArM), DE)

11:30 **Man versus machine: Is verbal instructor feedback in virtual-reality laparoscopic simulation dispensable? Results of a prospective randomised study**
Markus Paschold, Tobias Huber (University Medicine Johannes Gutenberg Mainz, DE); Sylke R. Zeissig (Johannes Gutenberg-University Mainz, DE); Daniel W. Kauff, Hauke Lang, Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE)

11:45 **Integral Training Simulation System For Spinal Cage Implantation in Lumbar Spine**
Marc Hirschfeld, Luis Bernal Vera, Eszter Fenyoehazi, Thomas Boy, Matthias Mueller, Ben Andrack, Andrej Machno (Leipzig University of Applied Sciences, DE); Werner Korb (Hochschule für Technik, Wirtschaft und Kultur (HTWK) Leipzig, DE)

12:00 **An anthropomorphic functional head phantom as a training tool for Intraoperative Optical Imaging**
Julia Kuß, Manuel Pyka, Simon Walz, Martin Oelschlägel, Tobias Meyer (Technical University Dresden, DE); Stephan Sobottka (Technical University Dresden, Clinic for Neurosurgery, DE); Ute Morgenstern (Technical University Dresden, DE)

12:15 **mobile Augmented Reality in Dermatology**
Christoph Noll, Bernhard Häussermann, Ute von Jan, Ulrike Raap, Urs-Vito Albrecht (Hannover Medical School, DE)

12:30 **A Practical training course "Technology of Anaesthesiology and Intensive Care Medicine" for physicians**
Stefan Schumann (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, DE); Matthias Schneider (University Hospital Freiburg, DE); Jasmin Seifried, Titschen (University Medical Center Freiburg, DE); Josef Guttmann (University Hospital Freiburg, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Konferenz Raum 12+14 [in German] **Track E**

FS: Patient Monitoring in der Anästhesie

Chairs: Michael Imhoff (Ruhr-University Bochum, DE), Jens Mühlsteff (Philips Research Europe, DE)

11:15 **Anesthesia in clinical practice**
Hartmut Gehring (University of Luebeck & University Hospital Schleswig-Holstein, DE)

11:30 **Application for real time PK/PD modeling at the place of anesthesia management**
Juergen Manigel (Dräger Medical, DE)

11:45 **Closed-loop controlled drug delivery in anesthesia**
Olaf Simanski (University Wismar, DE)

12:00 **Perspectives for Anesthesia in a Manufacturer Independent Networked Operating Room**
Marcus Köny (RWTH Aachen University, DE); Michael Czaplik (University Hospital Aachen, DE); Marian Walter (RWTH Aachen University, DE); Rolf Rossaint (University Hospital Aachen, DE); Steffen Leonhardt (RWTH Aachen University, DE)

12:15 **ISO 60601-1-10 from a Clinical Perspective**
Michael Imhoff (Ruhr-University Bochum, DE)

12:30 **Smart Apps Meet Anaesthesia**
Urs-Vito Albrecht (Hannover Medical School, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Wednesday, October 8, 2014 • • 11:15 - 12:45

Room: Runder Saal

Poster Session Tracks E, H, L, G, O

Chairs: Marc Kraft (Technical University Berlin, DE); Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE)

Room: Runder Saal 11:15 - 11:28 **Track E**

Poster Session: Clinical and Ambulatory Monitoring

P-E 01
11:15 **Suitability of OpenAir Plasma Beams for Medical Device Sterilization**
Markus Schönberger, Christian Schaller, Vera Seitz, Miriam Haerst, Markus Eblenkamp, Erich Wintermantel (Technical University Munich, DE)

P-E 02
11:19 **Sampling alveolar fraction of exhaled breath in equine species for analysis by gas chromatography-ion mobility spectrometry (GC-IMS)**
Carmen C. Klein, Sven Wietstock, Martin Hoffmann (fzmb GmbH - Forschungszentrum für Medizintechnik und Biotechnologie, DE)

P-E 03
11:23 **Analysis of conductive and capacitive moisture detection in a bed**
Tobias Wartzek, Johannes Ferch, Steffen Leonhardt (RWTH Aachen University, DE)

Room: Runder Saal 11:28 - 11:44 **Track H**

Poster Session: Image Based Intervention

P-H 01
11:28 **Market potential of MR-compatible guidewires and assessment of MR safety and compatibility**
Georg Uihlein (University of Applied Science Aalen, DE); Gregor Schaefers (MR:comp GmbH, DE)

P-H 02
11:32 **Phantom for testing of MRI image artefacts of interventional devices in MRI**
Reyhan Bahadir (Westphalian University of Applied Sciences, DE); Morwan Choli (Testing Services for Magnetic Resonance Safety & Compatibility & MR:comp GmbH, DE); Katharina Skopnik, Jan Watzlaw, Gregor Schaefers (MR:comp GmbH, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

P-H 03
11:36 **Estimation of the Brain Network for Perception of Body Movement with Intermediate Nodes**
Helen Perkunder, Galina Ivanova (Humboldt University Berlin, DE)

P-H 04
11:40 **Vascular structure tracking in intraoperative 3D ultrasound data during brain tumor resection**
Elisée Ilunga Mbuyamba (University Leipzig & ICCAS, DE); Dirk Lindner (University Hospital Leipzig, DE); Felix Arlt, Andrea Müns (University of Leipzig, DE); Jürgen Meixensberger (University Hosptal Leipzig AöR, DE); Claire Chalopin (University of Leipzig, DE)

Room: Runder Saal 11:45 - 12:13 **Track L**

Poster Session: Miscellaneous and Special Sessions (1)

P-L 01
11:45 **A Prototyping System for Smart Wheelchairs**
Norbert Fränzel (Ilmenau University of Technology, DE); Frank Weichert, Andreas Wenzel (Fraunhofer IOSB-AST, DE); Christoph Ament (University of Ilmenau, DE)

P-L 02
11:49 **Experimental Setup for the Analysis of the Water Jet of a Water-Assisted Liposuction Device**
Robert Mau, Christoph Drobek, Hermann Seitz (University of Rostock, DE)

P-L 03
11:53 **A novel diagnostic tool for therapeutic monitoring during the treatment of Pectus Excavatum with the vacuum bell**
David Hradetzky (University of Applied Sciences Northwestern Switzerland & School of Life Sciences, CH); Stefan Weiss (University of Applied Sciences Northwestern Switzerland, CH); Frank-Martin Haecker, Sergio B Sesia (University Children's Hospital of Basel (UKBB), CH)

P-L 04
11:57 **Development of vessel phantoms using intravascular ultrasound (IVUS) datasets**
Thomas Hoffmann, Sylvia Glaßer, Fabian Klink, Axel Boese, Martin Skalej (Otto-von-Guericke-University Magdeburg, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

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P-L 05
12:01 **Development of short-pulsed high-field electromagnetic dipoles for laser-based proton therapy**
Michael Schürer (OncoRay - National Center for Radiation Research in Oncology, Dresden, DE); Thomas Herrmannsdörfer (Helmholtz-Zentrum Dresden - Rossendorf, DE); Leonhard Karsch (OncoRay - National Center for Radiation Research in Oncology, Dresden, DE); Florian Kroll (Helmholtz-Zentrum Dresden - Rossendorf, DE); Umar Masood, Jörg Pawelke (OncoRay - National Center for Radiation Research in Oncology, Dresden, DE)

P-L 06
12:05 **Specific flow rate of infusion filter systems**
Anja Buchholz, Jörn-Bo Matthies (Institute for Biomedical Engineering, Rostock University Medical Center, DE); Wolfram Schmidt, Niels Grabow, Klaus-Peter Schmitz (University of Rostock, DE)

P-L 07
12:09 **Cell-Shape Wizard - A Concept for User-Guidance for Active Shape Segmentation in Fluorescence Cell Micrographs**
Daniela Franz, Veit Wiesmann (Fraunhofer Institute for Integrated Circuits IIS, DE); Marc Stamminger (University of Erlangen-Nuremberg, DE); Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Runder Saal 12:17 - 12:25 **Track** G

Poster Session: Home Health care and AAL

P-G 01
12:17 **Open iCare Assistant - Open Intelligent Infrastructure for Supporting Nursing Services in Home Care**
Angela Lottis, Frank Künemund, Christian Weinbörner, Christof Röhrig (University of Applied Sciences and Arts in Dortmund, DE)

P-G 02
12:21 **Open iCare Assistant - Requirements and Concept of an Intelligent Infrastructure for Supporting Inpatient Care**
Thomas Felderhoff, Daniel Bonney, Nicole Nennstiel, Michael Wulf (University of Applied Sciences and Arts Dortmund, DE)

Room: Runder Saal 12:25 - 12:53 **Track** O

Poster Session: Prevention and Rehabilitation Engineering

P-O 01
12:25 **Development of a Smart Walker with a Vibrating Belt for Assisting Visually Impaired**
Miguel Reyes Adame (Furtwangen University, DE); Andreas Wachaja, Pratik Agarwal, Wolfram Burgard (University of Freiburg, DE); Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE)

P-O 02
12:29 **Adaptive Control of Biomechanically Inspired Orthotic Exoskeleton in Paraplegic Rehabilitation**
Preethika Immaculate Britto, Rekha Vijayakumar (VIT University, IND); Sudesh Sivarasu (University of Cape Town, ZA)

P-O 03
12:33 **Assistive Robotics for Hemiplegics: Smart Wheel Chairs in Rehabilitative Robotics**
Preethika Immaculate Britto (VIT University, IND); Sudesh Sivarasu (University of Cape Town, ZA)

P-O 04
12:37 **Bubble point determination and calculation of the maximum pore size for hydrophilic membranes**
Jörn-Bo Matthies (University of Rostock, DE); Anja Buchholz (Institut for Biomedical Engineering, Rostock University Medical Center, DE); Wolfram Schmidt, Frank Luderer, Klaus-Peter Schmitz, Niels Grabow (University of Rostock, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

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P-O 05
12:41 **Development of a powered grasping device for home-based neurorehabilitation**
Thomas Feiler (University of Stuttgart / Fraunhofer IPA, DE); Felix Starker, Florian Dennerlein, Urs Schneider, Bernhard Budaker (Fraunhofer IPA, DE),;Surjo Soekadar, Matthias Witkowski (University Hospital Tuebingen, DE)

P-O 06
12:45 **A comparative in vitro study of different non-thermal atmospheric pressure plasma-jets regarding their antimicrobial potential and destruction of bacterial biofilms**
Katharina Wegner (University Medical Center Rostock & Biomechanics and Implant Technology Research Laboratory, DE); Kathrin Duske (University Medical Center Rostock, DE); Barbara Nebe (University of Rostock & Biomedical Res. Center, DE), Rainer Bader (University of Rostock, DE); Rene Bussiahn (Leibniz-Institute for Plasma Science and Technology (INP), DE); Andreas Podbielski (University Medical Center Rostock, DE)

P-O 07
12:49 **Forearm motor point characterization for smart electrode array shaping**
Aljoscha Reinert, Jan Loitz, Wolfgang Krautschneider, Dietmar Schroeder (Hamburg University of Technology, DE)

12:45 - 13:45 Lunch break • DGBMT Members' Meeting

Room: Niedersachsenhalle B

Keynote 2

13:45 **Cochlear Implants: Past and Current Challenges**
Prof. Dr. Erwin Hochmair, MED-EL Medical Electronics, Innsbruck, Austria

Erwin Hochmair studied Electrical Engineering at the Technical University in Vienna (Dipl.Ing. 1964, Dr.techn. 1967). In the following years he was research assistant there at the Institute of Physical Electronics, where he pursued research on electron beams for microwave applications, on semiconductor devices, and on circuit theory. He was especially involved in the early stages of the application of CMOS-technology to analog circuits. From 1970 - 1972 he was research associate at the NASA Marshall Space Flight Center in Huntsville, ALA.
In 1975 he started research on Cochlear Implants together with Ingeborg Desoyer (later Ingeborg Hochmair), who had just finished her studies in Electrical Engineering. In 1979 E. and I. Hochmair continued their research at the Stanford University, and from 1981 through 1989 they were consultants for 3M in St. Paul, MN.
After his habilitation in 1980 and continued research on CIs at the TU Vienna he was appointed full Professor for Applied Physics at the University of Innsbruck in 1985. In 1993 - 1995 he was Dean at the Faculty of Natural Sciences. He emerited in 2009.
In 1989 E. and I. Hochmair established the Med-El Company in Innsbruck, which is now, with approx. 1500 employees, the worldwide second largest CI-manufacturer.
In 2004 he received an honorary doctorate in Medicine from the Technical University of Munich. He is the (co-)author of over 100 scientific articles and over 50 patents.

14:15 - 14:30 Coffee break

Room: Niedersachsenhalle B **Track P**

Prosthetics and implants for bones and joints

Chairs: Rainer Bader (University of Rostock, DE); Klaus-Peter Schmitz (University of Rostock, DE)

14:30 **Evaluation of Osseointegration of Titanium Alloyed Implants: A Comparison of Micro-computed Tomography and Histomorphometry**
Carolin Gabler, Carmen Zietz, Richard Bieck, Rebecca Göhler, Rainer Bader (University of Rostock, DE)

14:45 **A novel concept for active electrical stimulation of the osseointegration of an uncemented total hip stem**
Cathérine Ebner (University of Rostock, DE); Yukun Su (University Medicine Rostock, DE), Ulf Zimmermann, Ursula van Rienen, Rainer Bader (University of Rostock, DE)

15:00 **Experimental analysis of the deformation behaviour and fixation stability of a novel monolithic acetabular cup made of composite ceramics**
Christian Schulze (University Medicine Rostock & Biomechanics and Implant Technology Research Labratory (Forbiomit), DE); Rebecca Dammer (University Medicine Rostock, DE); Sabine Begand, Thomas Oberbach (Mathys Orthopädie GmbH, DE); Rainer Bader (University of Rostock, DE)

15:15 **Control concept of a bionic knee prosthesis**
Bernhard Budaker (Fraunhofer IPA, DE); Peter Zahn (University Stuttgart, DE)

15:30 **Surgery-integrated and simulation-assisted shape design and placement of patella implants**
Berend Denkena, Volker Böß, Florian Uhlich (Leibniz University Hannover, DE)

15:45 **Concept, design and construction of an active supporting foot prosthesis**
Julia Schönherr (Vienna University of Technology, AUT); Marc Müller, Birgit Glasmacher (Leibniz University Hannover, DE)

16:00 - 16:30 Coffee break

Room: Bonatz Saal **Track P**

SFB 599: Herstellung Implantate

Chairs: Berend Denkena, Thomas Hassel (Leibniz University Hannover, DE)

14:30 **Drawing and Stranding of Magnesium Wires for use as a Resorbable Suture Material**
Rainer Eifler, Jan-Marten Seitz (Leibniz University of Hannover, DE); Christian Klose (Institute of Material Science, Leibniz University Hannover, DE); Friedrich-Wilhelm Bach (Leibniz Universität Hannover, DE)

14:45 **Improved Biocompatibility of Polyetheretherketone (PEEK) by Coating with Thin Titania Films**
Natalja Wendt, Peter Behrens (Leibniz University Hannover, DE); Peter Müller, Bushra Rais (Helmholtz Centre for Infection Research, RDIF, DE)

15:00 **Characterization of native and decellularised aortic tissue by using uniaxial tensile test**
Michael Bauer, Thomas Hassel, Oliver Grünzel (Leibniz Universität Hannover, DE); Carolyn Hinz, Tobias Schilling, Klaus Tim Kaufeld (Hannover Medical School, DE); Friedrich-Wilhelm Bach, Hans Jürgen Maier (Leibniz Universität Hannover, DE); Axel Haverich (Hannover Medical School, DE)

15:15 **Bonding Systems for Grinding of Medical Ceramics**
Lukas Tatzig, Britta Hering, Berend Denkena (Leibniz University Hannover, DE)

15:30 **Design and construction of novel shape-memory-alloy based adaptable orthopedic implants**
Ronny Pfeifer, Stefan Kaierle, Volker Wesling (Laser Zentrum Hannover e. V., DE); Christian Müller, Sebastian Decker, Manuel Krämer (Hannover Medical School, DE); Christof Hurschler (Hannover Medical School & Laboratory for Biomechanics and Biomaterials, DE)

16:00 - 16:30 Coffee break

Room: Blauer Saal

VDE MedTech 2014 (3)
Das vernetzte Krankenhaus

14:00 **Vernetzte Medizintechnik im Krankenhaus aus Herstellersicht**
Dr. Klaus-Martin Irion, Global Vice President / Forschung & Technologie, Karl Storz GmbH & Co. KG, Tuttlingen

14:30 **Interoperabilität als Weg zu Investitionssicherheit im vernetzten Krankenhaus**
Dr. med. Harald Deutsch, Partner, Leiter Industrie Healthcare, BearingPoint GmbH, Berlin

15:00 **Das vernetzte Krankenhaus: Nutzung durch die Pflege und Beitrag der Pflege – Kommunikation, Koordination und Information**
Christian Dahlmann. Leiter Pflege-IT, Universitätsklinikum Essen

15:30 **Die (Tele)Radiologie als Anwendungsfeld für Vernetzung im Krankenhaus**
Prof. Dr. med. Norbert Hosten, Direktor des Instituts für Diagnostische Radiologie und Neuroradiologie der Universitätsmedizin Greifswald

16:00 - 16:30 Coffee break

Room: Roter Saal [in English] **Track P**

FS - Hearing4All - Diagnostik

Chair: Hannes Maier (Medical University of Hannover, DE)

14:30 **Exploring the effect of mastoid obliteration to the output of electro-mechanical transducers**
Martin Grossöhmichen (Hannover Medical School, DE); Burkard Schwab (University of Hannover, DE); Rolf Salcher, Thomas Lenarz, Hannes Maier (Hannover Medical School, DE)

14:45 **Finite-element analysis evaluating the influence of middle ear and cochlear implants on the travelling wave in the cochlea**
Johannes Baumgart (Max Planck Institute for the Physics of Complex Systems, DE); Matthias Bornitz, Thomas Zahnert (Technical University Dresden, DE); Mario Fleischer (Technical University Dresden, Department of Medicine Carl Gustav Carus, DE)

15:00 **Multi-Frequency Acquisition of DPOAE Input-Output Functions for Auditory-Threshold Estimation**
Dennis Zelle, John Thiericke, Anthony Gummer, Ernst Dalhoff (HNO-Klinik Tübingen, DE)

15:15 **Experimental Audiology: Investigating Sound Transmission by intra-Cochlea Sound Pressure Measurements**
Christof Stieger (Universitätsspital Basel, CH); Defne Abur (Smith College,USA); Julie Merchant (Harvard Medical School, USA); Kourosh Roushan (Universitätsspital Basel, CH); Rosemary Farahmand, John Rosowski, Hideko Heidi Nakajima (Harvard Medical School, USA)

15:30 **Objective assessment of cochlear-implant outcome by means of electrophysiology**
Pascale Sandmann (Medical University of Hannover, DE)

15:45 **Experimental Assessment versus Audiometric Evaluation**
JaeHoon Sim (Universitätsspital Zürich, CH)

16:00 **The use of air conduction and bone conduction in audiology as a diagnostic tool**
Martin Kompis (Bern University Hospital, CH)

16:00 - 16:30 Coffee break

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Room: Konferenz Raum 7+9 **Track D**

Cellular, Tissue and Bioengineering: Bioreactor Technologies & Signals

Chair: Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

14:30 **Cell manipulation by gold nanoparticle mediated laser transfection**
Dag Heinemann, M. Schomaker, Stefan Kalies, Tammo Ripken, Heiko Meyer (Laser Zentrum Hannover, DE)

14:45 **Mechanical properties of lung cell monolayers compared with 3D-lung cell constructs embedded in collagen-gel**
Katharina Gamerdinger, Eva Smudde, Florian Wernet (University Medical Center, Freiburg, DE); Josef Guttmann (University Hospital Freiburg, DE); Stefan Schumann (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, DE)

15:00 **Ultra-structural analysis of angiogenic formation of endothelial cells in co-culture with osteoblasts on BMP-2- and VEGF -PDLLA composites**
Iris Bischoff (University Medical Center Mainz & Institute of Pathology, DE); Christoph Brochhausen, Eva Dohle (University Medical Center Mainz, DE); Herbert Jennissen (University Duisburg-Essen, DE); Thorsten Sänger (University Hospital Essen, DE); Markus Laub (Morphoplant GmbH, DE); Ashraf Sh. Asran (University Hospital Essen, DE); Goerg Michler (Martin-Luther-University Halle-Wittenberg, DE); C. James Kirkpatrick (University Mainz, DE)

15:15 **Impact of cryopreservation on histone modifications of mesenchymal stem cells**
Sandra Nitsch (Institute of Molecular and Cell Biology & Agency for Science, Technology and Research, SIN); Anamika Chatterjee, Nicola Hofmann (Leibniz University Hannover & Institute for Multiphase Processes, DE); Birgit Glasmacher (Leibniz University Hannover, DE)

15:30 **Investigation of the effect of different flow rates on the cell viability of fresh carotid arteries in vitro**
Lucrezia Morticelli, Panagiotis Kalozoumis (Hannover Medical School, DE); Julian Jentsch (University of Twente, NL); Ulrike Böer, Sotirios Korossis, Axel Haverich, Matthias Wilhelmi (Hannover Medical School, DE)

Continue Track D next page

16:00 - 16:30 Coffee break

Continue Track D

15:45 **Assessment of Perfusion Bioreactors System Using µCT Technology and 3D Modeling Methods**
Joseph Lovecchio (Institute of Biomedical and Neural Engineering, Reykjavik University, ISL); Sandra Jónsdóttir-Buch (Landspítali University Hospital, ISL); Guðrún Einarsdóttir, Magnús Kjartan Gíslason (Institute of Biomedical and Neural Engineering, Reykjavik University, ISL); Gissur Örlygsson (Innovation Centre, Iceland); Ólafur Sigurjónsson (Landspítali University Hospital, ISL); Paolo Gargiulo (Institute of Biomedical and Neural Engineering, Reykjavik University, ISL)

16:00 - 16:30 Coffee break

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Room: Konferenz Raum 8+10 [in English] **Track M**

Modelling and Simulation (1)

Chair: Sotirios Korossis (Hannover Medical School, DE)

14:30 **Using CFD for a Sensitivity Analysis of Stent Design Parameters**
Michael Stiehm, Martin Brede (University of Rostock, DE); Daniel Quosdorf (Technical University Munich, DE); Heiner Martin, Klaus-Peter Schmitz, Alfred Leder (University of Rostock, DE)

14:45 **Towards the CFD-based simulation of rigid body movement and shear stress of human cells in fluid flow**
Christoph Drobek (University of Rostock, DE); Hermann Seitz (University of Rostock, DE)

15:00 **Computer aided Modelling of Nasoalveolar Molding Devices for Cleft Lip and Palate Treatment**
Johannes Gattinger, Markus Schönberger, Erich Wintermantel, Andrea Rau, Klaus-Dietrich Wolff, Denys Loeffelbein (Technical University Munich, DE)

15:15 **Finite element modelling of the distal radioulnar joint**
Magnús Kjartan Gíslason (Institute of Biomedical and Neural Engineering, Reykjavik University, ISL); Alessandra Procopio (University of Bologna, IT); Gissur Örlygsson (Innovation Centre, ISL), Ólafur Sigurjónsson (Landspítali University Hospital, ISL), Halldór Jónsson Jr. (Landspitali Hospital, ISL); Paolo Gargiulo (Institute of Biomedical and Neural Engineering, Reykjavik University, ISL)

15:30 **Patient-specific computational modelling of the mitral valve**
Panagiotis Kalozoumis, Lucrezia Morticelli, Axel Haverich, Sotirios Korossis (Hannover Medical School, DE)

15:45 **Sensitivity Study: Efficiency of Ventricles of the Human Heart Depending on Fiber Orientations**
Lukas Baron, Thomas Fritz, Gunnar Seemann, Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

16:00 **Quantification of loads on the lumbar spine of children with different body weight – a comparative study with the help of computer modelling**
Sabine Bauer, Catherine Wasserhess, Dietrich Paulus (University Koblenz-Landau, DE)

16:00 - 16:30 Coffee break

Room: Konferenz Raum 11+13 **Track L**

FS: EAMBES: Medical Device Directive / Regulatory

Chairs: Brigit Glasmacher (Leibniz University Hannover, DE), Michael Imhoff (Ruhr-University Bochum, DE)

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14:30 **Motivation and Goals of the new MDD**

15:00 **Current Results from the BfArm database**
Wolfgang Lauer (Federal Institute for Drugs and Medical Devices (BfArM), DE)

15:15 **Proposed changes of the MDD and related regulations**
Thorsten Prinz (DGBMT im VDE e.V., DE)

15:30 **Comparison between different regulatory systems**
Klaus Neuder (VDE DKE, DE)

15:45 **Medical Device Regulations - Potential impact on patient care and biomedical research**
Michael Imhoff (Ruhr-University Bochum, DE)

16:00 - 16:30 Coffee break

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Room: Konferenz Raum 12+14 **Track G**

Home Health care and AAL

Chair: Martin Braecklein (DGBMT Fachausschuss Mobile Diagnose- und Therapiesysteme - mHealth & Linde Healthcare, DE)

14:30 **Challenges and Conceptual Design of a Headset for Home-based Application of EEG-related Neurofeedback for Patients with ADHD**
Christine Goffin, Armin Janß, Stefan Erlhofer (RWTH Aachen University, DE); Tilman Gaber, Eva Lotte Knospe, Florian Daniel Zepf (University Hospital Aachen, DE); Klaus Radermacher (RWTH Aachen, DE)

14:45 **Service Robotics Technologies to Support Care Staff**
Birgit Graf (Fraunhofer IPA, DE)

15:00 **Development of a Fall Detection System and Comparison with Commercial Systems for Home Care**
Torben Bastert, Frank Künemund, Christof Röhrig (University of Applied Sciences and Arts in Dortmund, DE)

15:15 **Assessment of the User Interface of Walking Aids: Force measurement at the Handle**
Martin Staemmler (Fachhochschule Stralsund, DE), Ursula Hübner (University of Applied Sciences, DE)

15:30 **Usability of low-power MEMS sensors for non-invasive pulse wave measurement**
Daniel Wohlrab (Technical University Chemnitz, DE); Dirk Tenholte (Technical University Chemnitz & Fakultät für Elektrotechnik und Informationstechnik, DE); Axel Müller (Klinikum Chemnitz gGmbH, DE); Jan Mehner (Technical University Chemnitz, DE)

15:45 **Mobile ECG-PPG combined Heart Rate Estimation using a wireless Body Sensor Network**
Maik Pflugradt, Reinhold Orglmeister (Technical University Berlin, DE)

16:00 - 16:30 Coffee break

Room: Runder Saal

Poster Session Tracks C and I (1)

Chairs: Thomas Schanze (Technische Hochschule Mittelhessen-University of Applied Sciences, DE); Gudrun Stockmanns (Niederrhein University of Applied Sciences, DE)

Room: Runder Saal 14:30 - 15:46 **Track C**

Poster Session: Biosignal Processing

P-C 01
14:30 **Design of an improved four-electrode measurement mode for AD5933**
Yuxiang Yang (Xi'an University of Technology, CHN)

P-C 02
14:34 **Evaluation of environmental effects on the measurement of electrodermal activity under real-life conditions**
Dorothee Kapp, Kristina Schaaff (FZI Forschungszentrum Informatik, DE); Joerg M. Ottenbacher (Movisens GmbH, DE); Stephan Heuer (FZI Forschungszentrum Informatik, DE); Wilhelm Stork (Karlsruhe Institute of Technology, DE)

P-C 03
14:38 **The influence of a PEEP-wave maneuver on lung recruitment in healthy and injured lungs: a study in mechanically ventilated pigs**
Sara Lozano-Zahonero (University Medical Center Freiburg, DE); Sarah Bühler (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, U, DE); Hanna Runck (University Hospital Freiburg, DE); Katharina Gamerdinger (University Medical Center, DE); Katharina Foerster, Jörg Haberstroh (University Hospital Freiburg, DE); Stefan Schumann (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, DE); Josef Guttmann (University Hospital Freiburg, DE)

P-C 04
14:42 **Development of a multi-stage model for the determination of biosignal processing methods to derive vital signs from a force sensor functionalized nursing bed**
Andreas Kitzig, Gudrun Stockmanns (Niederrhein University of Applied Sciences, DE); Reinhard Viga, Anton Grabmaier (University of Duisburg-Essen, DE)

16:00 - 16:30 Coffee break

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P-C 05
14:46 **Respiratory Flow Estimation under cPAP- and BiPAP-Ventilation by Means of Normal Lung Sound**
Florian Schudt (Technische Hochschule Mittelhessen – University of Applied Sciences, DE); Oezlem Catikkaya (Clinic of Wetzlar, DE); Ljudmila Mursina (Technische Hochschule Mittelhessen – University of Applied Sciences & Competence Centre for Information Technology, DE); Andreas Weissflog (ThoraTech GmbH, DE); Ulrich Koehler (Philipps-University Marburg, DE); Volker Gross, Keywan Sohrabi (Technische Hochschule Mittelhessen – University of Applied Sciences, DE)

P-C 06
14:50 **Development of an algorithm to estimate the positions of neuronal sources recorded with multichannel microelectrodes**
Martin Nguyen, Julian Heun, Christopher Doerr, Thomas Schanze (Technische Hochschule Mittelhessen.University of Applied Sciences, DE)

P-C 07
14:54 **Measuring the Deepness of Anesthesia using Photoplethysmogram signal and System Identification**
Ahmad Al-Taan, Wilhelm Stork (Karlsruhe Institute of Technology, DE); Stefan Schumann (University Medical Center of Freiburg, DE); Josef Guttmann (University Hospital Freiburg, DE); Steffen Wirth (Hugstetter Strasse 55 79106 Freiburg, DE) and Karla Hahn (University Hospital Freiburg, DE)

P-C 08
14:58 **Optimization of atrioventricular and interventricular pacing delay in biventricular pacing with different left ventricular electrode position**
Matthias Heinke (University of Applied Sciences Offenburg & Department of Electrical Engineering and Information Technology, DE); Gudrun Dannberg (University of Jena, DE); Olaf Solbrig (Medis GmbH Ilmenau, DE); Jürgen Querengässer (Medis GmbH Ilmenau, DE); Helmut Kühnert (University of Jena, DE)

P-C 09
15:02 **Short-term correlation of retinal vessel width and blood pressure**
Steffen Rieger, Daniel Baumgarten (Technical University Ilmenau, DE)

16:00 - 16:30 Coffee break

P-C 10
15:06 **DSP-based real-time-compression of bio-signals for intelligent implants**
Tobias Lang (Fraunhofer IBMT & University of Kaiserslautern, DE); Josep Cardona (IBMT, DE); Tomasz Moszkowski (Fraunhofer IBMT & AGH - University of Science and Technology, DE); Roman Ruff (Fraunhofer Institut für Biomedizinische Technik, DE); Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE)

P-C 11
15:10 **Vibroarthrography of the human knee: Measurements and feature extraction**
Oussama Jarrousse (Ludwig-Maximilian-University of Munich, DE); Tuan Nam Le, Simon Weidert (University Hospital of Munich, DE); Jacqueline Huvanandana (Munich-Innovation Group, DE); Marcus Müller (Communication Engineering Lab, Karlsruhe Institute of Technology (KIT), DE); Jens P. Elsner (Fennec Research, DE); Achim Flesser, Michael Fazekas (CPE GmbH, DE)

P-C 12
15:14 **Flow measuring during neonatal high frequency jet ventilation using orifice plate**
Petr Kudrna, Martin Rožánek, Barbora Hřibalová (Czech Technical University Prague, CZ)

P-C 13
15:18 **Contact-free measurement of physiological parameters by means of an optical tracking system**
Falk Lüsebrink, Johannes W Krug, Georg Rose, Oliver Speck (Otto-von-Guericke University Magdeburg, DE)

P-C 14
15:22 **Harvesting energy from the heart wall motion - Device weight considerations**
Adrian Zurbuchen, Andreas Haeberlin, Jakob Schaerer, Alois Pfenniger (University of Bern, CH); Rolf Vogel (Spital Solothurn, University of Bern, CH)

P-C 15
15:26 **Artifact detection and signal reconstruction for 12-channel ECG signals from a wireless body sensor network during motion**
Steffen Mann, and Reinhold Orglmeister (Technical University Berlin, DE)

16:00 - 16:30 Coffee break

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P-C 16
15:30 **A Fall Detection and Activity Monitoring Algorithm for a Tele-Care System Supporting Dementia and Alzheimer Patients**
André Schwarzmeier, Nils Roth, Robert Weigel (University of Erlangen-Nuremberg, DE); Georg Fischer (University of Erlangen-Nuremberg & Eesy-id, DE); Dietmar Kissinger (University of Erlangen-Nuremberg, DE)

P-C 17
15:34 **Atrioventricular conduction time and permanent pacemaker therapy after transcatheter aortic valve implantation**
Pierre Christian Takam (University of Applied Sciences Offenburg, DE); Joachim Büttner, Dietmar Höfflin (Universitätsherzzentrum Freiburg-Bad Krozingen, DE); Matthias Heinke (University of Applied Sciences Offenburg & Department of Electrical Engineering and Information Technology, DE)

P-C 18
15:38 **Ventricular desynchronization with electrical interventricular delay to left ventricular delay ratio in atrial fibrillation heart failure patients**
Matthias Heinke (University of Applied Sciences Offenburg & Department of Electrical Engineering and Information Technology, DE); Gudrun Dannberg (University of Jena, DE); Tobias Heinke (Siemens AG Healthcare Sector, DE); Helmut Kühnert (University of Jena, DE)

P-C 19
15:42 **Computational aspects of small-worldness in spatio-temporal neural complex networks**
Robert Franke (Humboldt University Berlin, DE)

16:00 - 16:30 Coffee break

Room: Runder Saal 15:46 - 16:02 **Track I**

Poster Session: Imaging and Image Processing (1)

P-I 01
15:46 **Development and evaluation of passive autofocus algorithms in the field of automated microscopy**
Daniel Erpenbeck (Friedrich-Alexander University & Fraunhofer Institute for Integrated Circuits IIS, DE); Thomas Wittenberg, Christian Münzenmayer, Michaela Benz (Fraunhofer Institute for Integrated Circuits IIS, DE)

P-I 02
15:50 **Extracellular Space Contribution to the Double Wave Vector Diffusion-Weighted Signal**
Patricia Ulloa (University of Luebeck, DE); Viktor Wottschel (University College London, UK); Martin A. Koch (University of Luebeck, DE)

P-I 03
15:54 **Assessment of the plant health status based on hyperspectral and color image analysis towards the cGMP-compliant large-scale production of biopharmaceuticals in plants**
Claudia Dach (Fraunhofer IIS, DE); Daniel Erpenbeck (Friedrich-Alexander University & Fraunhofer Institute for Integrated Circuits IIS, DE); Thomas Rademacher, Andreas Reimann (Fraunhofer IME, DE); Thomas Wittenberg, Christian Münzenmayer, Michaela Benz (Fraunhofer Institute for Integrated Circuits IIS, DE)

P-I 04
15:58 **Gaussian mixture models for classification of perfused blood vessels in intraoperative thermography**
Nico Hoffmann (Technical University Dresden, DE); Yordan Radev (Technical University Dresden, Klinik und Poliklinik für Neurochirurgie, DE); Julia Hollmach, Christian Schnabel (Technical University Dresden, DE); Matthias Kirsch (University Hospital Dresden, DE), Gabriele Schackert, Uwe Petersohn, Edmund Koch (Technical University Dresden, DE); Gerald Steiner (Clinical Sensoring and Monitoring, DE)

16:00 - 16:30 Coffee break

Room: Runder Saal

Poster Session Track I (2)

Chairs: Heinrich M. Overhoff (Westphalian University of Applied Sciences, DE), Andreas Melzer (University of Dundee, UK)

Room: Runder Saal 16:30 - 18:00 **Track I**

Poster Session: Imaging and Image Processing (2)

P-I 05
16:30 **Single-mode fiber based polarization sensitive swept source optical coherence tomography using alternating sweep polarizations**
Lars Kirsten, Pascal Rottmann (Technical University Dresden, Clinical Sensoring and Monitoring, DE); Anke Burkhardt, Maria Gaertner, Julia Walther, Edmund Koch (Technical University Dresden, DE)

P-I 06
16:34 **Recording the Movement Behaviour of a Bolus on Variation of the Bolus Density in the Rumen of Cattle with a Magnetic Monitoring System**
Thomas Reuter, Mario Beck (fzmb GmbH, DE); Sandra Lindner (Matesy GmbH, DE); Sebastian Wangemann, Rocco Holzhey (Innovent Technologieentwicklung Jena, DE); Martin Hoffmann (fzmb GmbH - Forschungszentrum für Medizintechnik und Biotechnologie, DE)

P-I 07
16:38 **Open Healthcare: Transferring Research to Everyday Cardiology with Free Software**
Björn Schwarz, Markus Kaiser (Technische Hochschule Mittelhessen – University of Applied Sciences, DE); Ljudmila Mursina (Technische Hochschule Mittelhessen - University of Applied Sciences & Competence Centre for Information Technology, DE), Andreas Rolf (Kerkhoff Klinik gGmbH, DE); Henning Schneider (Technische Hochschule Mittelhessen – University of Applied Sciences, DE)

P-I 08
16:42 **Intraoperative perfusion imaging of the cerebral cortex by time-resolved thermography**
Julia Hollmach (Technical University Dresden, DE); Yordan Radev (Technical University Dresden, Klinik und Poliklinik für Neurochirurgie, DE); Nico Hoffmann, Christian Schnabel, Stephan Sobottka (Dresden University of Technology, DE); Matthias Kirsch (Universitätsklinikum Dresden, DE); Gabriele Schackert, Edmund Koch (Technical University Dresden, DE); Gerald Steiner (Clinical Sensoring and Monitoring, DE)

18:15 - 19:30 Conference Opening • 19:30 - 22:00 Get Together

P-I 09
16:46 **Influence of thin non-conducting layers in electro-magnetic body-phantoms for imaging radar**
Jochen Schmid, Carl Marzi, Vanessa Lupici-Baltzer, Malyhe Jalilvand, Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

P-I 10
16:50 **Improving the Consistency of Manual Deep Brain Structure Segmentations by Combining Variational Interpolation, Simultaneous Multi-Modality Visualisation and Histogram Equilisation**
Florian Bernard (Centre Hospitalier de Luxembourg, LUX), Peter Gemmar (Trier University of Applied Sciences, DE), Andreas Husch, Christian Saleh (Centre Hospitalier de Luxembourg, LUX); Heinrich Neb (Trier University of Applied Sciences, DE); Georges Dooms, Frank Hertel (Centre Hospitalier de Luxembourg, LUX)

P-I 11
16:54 **Parameterization of the complex MPI signal using a set of coefficients of polynomial base functions**
Daniel Schmidt, Florian Palmetshofer, Uwe Steinhoff (Physikalisch-Technische Bundesanstalt, DE)

P-I 12
16:58 **Evaluation of reproducibility and variability of a per-fusion phantom**
Sebastian Gugel, Pascal Mier, Axel Boese, Georg Rose (Otto von Guericke University Magdeburg, DE)

P-I 13
17:02 **Image fusion of histological images to generate high resolution datasets of the human middle and inner ear structures**
Silke Hügl, Jakob Lexow, Thomas S. Rau, Thomas Lenarz, Omid Majdani (Hannover Medical School, DE)

P-I 14
17:06 **Lensless Live Cell Imaging with thermoelectric cooled Cell-Microscope**
Moritz Hubl (Fraunhofer IZM, DE)

P-I 15
17:10 **Comparison of OpenCL and OpenGLSL for real-time reconstruction of ultrasound images**
Stefan Maas, Heinrich M. Overhoff (Westphalian University of Applied Sciences, DE)

P-I 16
17:14 **Design and Construction of an Ultrasound Transducer Positioning and Fixation Device**
Dennis Sandkühler, Linda Kopp, Ewald Bonberg, Anke Poelstra, Heinrich M. Overhoff (Westphalian University of Applied Sciences, DE)

Wednesday, October 8, 2014 • 16:30 - 18:00

P-I 17
17:18 **Utilization of Shape and Texture features for Classification of Malignant Tumors in MR Images**
Ankit Vidyarthi, Namita Mittal (MNIT Jaipur, India)

P-I 18
17:22 **Entropy based image blending for endoscopic panorama imaging in cystoscopy**
Tobias Bergen, Jonas Trost, Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE)

P-I 19
17:26 **Characterization of Superparamagnetic Nanoparticles using a Micro-CT Phantom: Estimation of Iron Concentration in Ferrofluids**
Christina Debbeler, Jan Müller, Kerstin Lüdtke-Buzug (University of Luebeck, DE)

P-I 20
17:30 **Semi-Automated Detection and Fractal Characterization of Myocardial Fibrosis in Histological Images**
Michael Mayrhofer-Reinhartshuber, Philipp Kainz (Medical University of Graz, AUS); Damian Sanchez-Quintana, Yolanda Macias (University of Extremadura, ESP); Ernst Hofer, Helmut Ahammer (Medical University Graz, AUS)

P-I 21
17:34 **Iterative Hard Thresholding for the Reconstruction of an Undersampled System Matrix in Magnetic Particle Imaging**
Matthias Kleine (University of Luebeck & Graduate School for Computing in Medicine and Life Sciences, DE); Anselm von Gladiß, Thorsten M. Buzug (University of Luebeck, DE)

P-I 22
17:38 **A Novel System Calibration Method in Photoacoustic Tomography**
Milan Oeri, Wolfgang Bost, Marc Fournelle, Steffen Tretbar (Fraunhofer Institute for Biomedical Engineering, DE)

P-I 23
17:42 **Three-dimensional TV Minimization Algorithm using Total Curvature**
Eric Wisotzky (Fraunhofer Institute for Production Systems and Design Technology, DE); Marc Käseberg (Fraunhofer-Institut für Produktionsanlagen und Konstruktionstechnik IPK, DE); Erwin Keeve (Charité - Universitätsmedizin Berlin, DE)

18:15 - 19:30 Conference Opening • 19:30 - 22:00 Get Together

P-I 24
17:46 **New robotic phantom: Validation of performance in respiration triggered medical imaging**
Henry Arenbeck, André Duffe (RWTH-Aachen University, DE); Oliver Winz, Carolin Schubert, Nuria Escobar Corral, Michael Eble, Felix Mottaghy (University Hospital Aachen, DE); Dirk Abel (RWTH Aachen University, DE)

P-I 25
17:50 **Using Principal Component Analysis and IIR-Filtering for Detecting the Position of the Heart in Electrical Impedance Tomography at different Stimulation Frequencies**
Benjamin Schullcke (Hochschule Furtwangen University, DE); Ashkan Javaherian (Institute of Technical Medicine (ITEM), DE); Knut Möller (Hochschule Furtwangen, DE)

P-I 26
17:54 **Impact of electrode positioning on EIT data interpretation**
Sabine Krüger-Ziolek, Zhanqi Zhao (Furtwangen University, DE); Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE)

P-I 27
17:58 **Large scale in vivo imaging of the corneal sub-basal nerve plexus by guided eye movements**
Stephan Allgeier, Bernd Köhler, Susanne Maier (Karlsruher Institut für Technologie (KIT), DE); Sabine Peschel (University of Rostock, DE); Klaus-Martin Reichert (Karlsruher Institut für Technologie (KIT), DE); Oliver Stachs (University of Rostock, DE); Jos van Wezel, Ralf Mikut, Georg Bretthauer (Karlsruhe Institute of Technology, DE)

Room: Niedersachsenhalle B **Track P**

Vascular implants and passive implants

Chairs: Klaus-Peter Schmitz (Universität Rostock, DE); Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

16:30 **Biomechanical Parameters for Evaluation of Strength of Different Calcaneus Fracture Fixation Systems**
Heiner Martin (University of Rostock, DE); Benjamin Ulmar, Sophia Labs (University Medicine Rostock, DE); Stefan Döbele, Sebastian Gühring (Eberhard-Karls-University Tübingen, DE); Gerhard Scharr, Klaus-Peter Schmitz, Thomas Mittlmeier (Universität Rostock, DE)

16:45 **Measurement of radiopacity of vascular implants**
Wolfram Schmidt, Peter Behrens (University of Rostock, DE); Frank Kamke (University Medical Center Rostock, DE); Klaus-Peter Schmitz (University of Rostock, DE)

17:00 **Designing a textile reinforcement for a tissue engineered mitral valve**
Valentine Gesché, Maximilian Schilling, Ricardo Moreira, Thomas Gries, Petra Mela (RWTH Aachen, DE); Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

17:15 **Development of an actuated mobile prototype to replicate individual jaw movements**
Kay Lenkenhoff, Horst Meier (Ruhr-University Bochum, DE)

17:30 **Fabrication of scaffolds with different pore sizes using a low-cost 3d printer**
Philipp Drescher, Hermann Seitz (University of Rostock, DE)

Room: Bonatz Saal **Track A**

SFB 599: In Vitro Testverfahren

Chairs: Hansjörg Hauser (Helmholtz Centre for Infection Research, DE); Manfred Kietzmann (University of Veterinary Medicine Hannover, DE)

16:30 **Assessing the immunotoxic potential of biodegradable magnesium**
Stephan Schumacher (University of Veterinary Medicine Hannover, DE); Isabelle Roth (Elanco Animal Health, DE); Wolfgang Bäumer (NCSU College of Veterinary Medicine, DE); Kathrin Baumert (Hannover Medical School, DE); Tina Basler (University of Veterinary Medicine Hannover, DE); Jan-Marten Seitz, Florian Evertz, Birgit Glasmacher (Leibniz University Hannover, DE); Peter P. Mueller, Hansjörg Hauser (Helmholtz Centre for Infection Research, DE); Manfred Kietzmann (University of Veterinary Medicine Hannover, DE)

16:45 **Characterization and optimization of antibacterial bacterial implants in vitro and validation in a small animal model**
Muhammad Rahim (Helmholtz Centre for Infection Research & Technical University of Braunschweig, DE); Bushra Rais (Helmholtz Centre for Infection Research, RDIF, DE); Marc Kieke, Florian Evertz (Leibniz University Hannover, DE); Andreas Weizbauer, Henning Windhagen, Elmar Willbold (Hannover Medical School, DE); Manfred Kietzmann (University of Veterinary Medicine Hannover, DE); Birgit Glasmacher (Leibniz University Hannover, DE); Meike Stiesch (Medical School Hannover, DE); Hansjörg Hauser (Helmholtz Centre for Infection Research, DE); Peter Behrens (Leibniz University Hannover, DE); Peter P. Mueller (Helmholtz Centre for Infection Research, DE)

17:00 **In vitro biocompatibility testing of biodegradable magnesium**
Stephan Schumacher (University of Veterinary Medicine Hannover, DE); Isabelle Roth (Elanco Animal Health, DE); Jessica Stahl (University of Veterinary Medicine Hannover, DE); Wolfgang Bäumer (NCSU College of Veterinary Medicine, DE); Jan-Marten Seitz (Leibniz University of Hannover, DE); Florian Evertz, Birgit Glasmacher (Leibniz University Hannover, DE); Peter P. Mueller, Hansjörg Hauser (Helmholtz Centre for Infection Research, DE); Martin Durisin, Thomas Lenarz (Medical University of Hannover, DE);Manfred Kietzmann (University of Veterinary Medicine Hannover, DE)

Continue Track A next page

Continue Track A

17:15 **In vitro degradation and biomechanical testing of magnesium alloys**
Andreas Weizbauer, Manuel Krämer, Christian Modrejewski (Hannover Medical School, DE); Sabine Behrens, Rainer Eifler, Britta Hering (Leibniz University Hannover, DE); Janin Reifenrath (University of Veterinary Medicine Hannover, DE); Elmar Willbold (Hannover Medical School, DE); Silke Besdo (Leibniz University Hannover, DE); Markus Schilling, Hazibullah Waizy, Henning Windhagen (Hannover Medical School, DE)

Room: Blauer Saal

VDE MedTech 2014 (4)
Das vernetzte Krankenhaus

16:30 **Die HNO-/Kopfchirurgie als Anwendungsfeld im vernetzten Krankenhaus**
Prof. Dr. med. Gero Strauß, Vorstand für Wissenschaft und Entwicklung des ICCAS an der Medizinischen Fakultät der Universität Leipzig

17:00 **Nachhaltiger Krankenhausbetrieb durch sektorenübergreifende Zusammenarbeit**
Dr. André Michel, Hauptamtlicher Ärztlicher Direktor, Klinikum Hanau

17:30 **Vernetzung im Krankenhaus als Beitrag zur ökonomischen Stärkung**
Karsten Honsel, Kaufmännischer Direktor, Universitätsklinikum Bonn

18:00 **Zusammenfassung und Ausblick**

Room: Roter Saal **Track P**

FA: Kopfimplantate

Chairs: Thomas Lenarz, Meike Stiesch (Hannover Medical School, DE)

16:30 **Subretinale Netzhautimplantate**
Carsten Framme (Hannover Medical School, DE)

16:45 **Deep Brain Stimulation**
Joachim Krauss (Hannover Medical School, DE)

17:00 **Cochlea-Implantate**
Andreas Büchner (Hannover Medical School, DE)

17:15 **Hörimplantate**
Omid Majdani (Hannover Medical School, DE)

17:30 **Biologisch adäquat - Die Herausforderung für das Kopfimplantat**
Nils-Claudius Gellrich (Hannover Medical School, DE)

Wednesday, October 8, 2014 • 16:30 - 18:00

Room: Konferenz Raum 7+9 **[in German]** **Track L**

FS: Innovation management in medical engineering

Chairs: Sven Bode (BIPTORNIK GmbH & Co. KG, DE), Hans-Jürgen Wildau (BIOTRONIK SE & Co. KG, DE)

16:30 **Innovation und Technologieforschung**
Urban Schnell (Helbling Technik, CH)

16:50 **Vom Pflichtenheft zum Produkt - Do and Don't's**
Thorsten Goettsche (OSYPKA AG, DE)

17:10 **Klinische Studien - Der Schlüssel zum erfolgreichen Studiendesign**
Friedrich Koehler (Charité - Universitaetsmedizin Berlin, DE)

17:30 **Zulassung und Reimbursement - Der lange Marsch durch die Institutionen**
Olaf Winkler (Bundesverband Medizintechnologie e.V., DE)

18:15 - 19:30 Conference Opening • 19:30 - 22:00 Get Together

Room: Konferenz Raum 8+10 **Track J**

FS: MEG/EEG modeling

Chair: Jens Haueisen (Technical University Ilmenau, DE)

16:30 **New methodology for the forward problem in EEG/MEG source analysis and in brain stimulation**
Johannes Vorwerk, Sven Wagner, Ümit Aydin, Christian Engwer (University of Münster, DE); Carsten H. Wolters (Institute for Biomagnetism and Biosignalanalysis, DE)

16:45 **Reliable Fast Adaptive Finite Element Methods for the EEG/MEG Forward Problem**
Anne Hanrath, Lars Grasedyck (Institute for Geometry and Practical Mathematics (IGPM), RWTH Aachen University, DE)

17:00 **Realistic modelling of skull defects in finite element head models for source reconstruction from MEG and EEG**
Stephan Lau (Ilmenau Technical University & University of Melbourne & Biomagnetic Center Jena, DE); Daniel Güllmar (Jena University Hospital, DE); Lars Flemming (Friedrich-Schiller-University Jena, DE); Jens Haueisen (Technical University Ilmenau, DE)

17:15 **Influence of the head model on EEG and MEG source connectivity analysis**
Jae-Hyun Cho (Max Planck Institute for Human Cognitive and Brain Sciences, DE); Johannes Vorwerk (University of Münster, DE); Carsten H. Wolters (Institute for Biomagnetism and Biosignalanalysis, DE); Thomas Knösche (MPI Leipzig, DE)

17:30 **Skull-equivalent material for an EEG physical head phantom**
Alexander Hunold, Patrique Fiedler (Ilmenau University of Technology, DE); Stephan Lau (Ilmenau Technical University & University of Melbourne & Biomagnetic Center Jena, DE); Daniel Güllmar (Jena University Hospital, DE); Jens Haueisen (Technical University Ilmenau, DE)

17:45 **Towards an automated method of generating volume conductor models**
Dominic Portain, Burkhard Maess, Hermann Sonntag (Max Planck Institute for Human Cognitive and Brain Sciences, DE)

Wednesday, October 8, 2014 • 16:30 - 18:00

Room: Konferenz Raum 11+13 **Track L**

FS: EAMBES: Biohybrid Implants and Regulatory Affairs

Chairs: Birgit Glasmacher (Leibniz University Hannover, DE); André C. Linnenbank (University of Amsterdam, NL)

16:30 **Innovate or die – how to prosper in a hostile environment**
Matthias P. Schönermark (SKC Beratungsgesellschaft mbH, DE)

17:00 **Ethics and Law in Regenerative Medicine: Regulating Innovative Health Technologies**
Nils Hoppe, Jasjote Grewal (Leibniz University Hannover, DE)

17:15 **High voltage alginate encapsulation of monkey stem cells for application in regenerative medicine**
Oleksandr Gryshkov, Birgit Glasmacher (Leibniz University Hannover, DE)

17:30 **BIOHYBRID nerve transplants – development of chitosan-based nerve grafts**
Kirsten Haastert-Talini (Hannover Medical School, DE); Stefano Geuna (University of Turin, DE); Abraham Shahar (N. V. R. Research ltd, DE); Thomas Freier (Medovent GmbH, DE); Claudia Grothe (Hannover Medical School, DE)

17:45 **Stem cells for personalized medicine - In-vitro and in-silica models**
Jari Hyttinen (Tampere University of Technology, FIN)

18:15 - 19:30 Conference Opening • 19:30 - 22:00 Get Together

Room: Konferenz Raum 12+14 [in German] **Track K**

FS: mHealth

Chair: Martin Braecklein (DGBMT Fachausschuss Mobile Diagnose- und Therapiesysteme - mHealth & Linde Healthcare, DE)

16:30 **Apps in medical usage – current situation and developments**
Martin Braecklein (DGBMT Fachausschuss Mobile Diagnose- und Therapiesysteme - mHealth & Linde Healthcare, DE)

16:45 **Development, implementation, and operation of mobile medical apps**
David Schmoldt (Philipps-University Marburg, DE); Wolfgang Mondorf (Haemostas-Frankfurt, DE); Hartmut Pollmann (ITH, Münster, DE); Andreas Rösch (Rösch & Associates GmbH, DE)

17:00 **Regulatory Implications**
Wolfgang Lauer (Federal Institute for Drugs and Medical Devices (BfArM), DE)

17:15 **Ethical and Legal Implications on Apps in Clinical Trials**
Urs-Vito Albrecht (Hannover Medical School, DE); Oliver Pramann (Kanzlei34 - Rechtsanwälte und Notare, DE)

17:30 **Readout: Health Apps and their Data Sending Behaviour**
Urs-Vito Albrecht, Tobias Jungnickel; Ute von Jan (Hannover Medical School, DE)

17:45 **Podiums-Discussion with presenters**
Martin Braecklein (DGBMT Fachausschuss Mobile Diagnose- und Therapiesysteme - mHealth & Linde Healthcare, DE)

Room: Konferenz Raum 27+28

Presentations of the Award Winners

Chairs: Uvo M. Hölscher (Münster University of Applied Sciences, DE); Werner Korb (Hochschule für Technik, Wirtschaft und Kultur (HTWK) Leipzig, DE); Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

16:30 **Integrity monitoring and route tracking of infusion systems**
David Grosse-Wentrup (Münster University of Applied Sciences, DE)

16:45 **Central Online Quality Assurance in Radiology: an IT Solution Exemplified by the German Breast Cancer Screening Program**
Jörg Czwoydzinski (University Hospital Münster, DE)

17:00 **Design and development process of a next-generation training system for spinal surgery**
Gerold Bausch (Leipzig University of Applied Sciences, DE)

17:15 **CMOS-Based Intracerebral Neural Interfaces**
Karsten Seidl (Department of Microsystems Engineering (IMTEK), University of Freiburg, DE)

17:30 **A hyperpolarized equilibrium for magnetic resonance**
Jan-Bernd Hövener (Medizin Physik, Universität Hospital Freiburg, DE)

17:45 **Formation, characterization and diagnostic usability of exhaled aerosols endogenously generated in the human lung**
Katharina Schwarz (Fraunhofer ITEM, DE)

Room: Niedersachsenhalle B

Keynote 3

08:30 **Cardiovascular Devices and Implants: Patient Customization and Biohybrid Approach**
Prof. Dr. Thomas Schmitz-Rode, Institute of Applied Medical Engineering, RWTH Aachen University

Professor Thomas Schmitz-Rode studied Mechanical Engineering at RWTH Aachen University and received a Dipl.-Ing. degree in 1982. After working as an engineer at Symbion GmbH/Inc from 1984-1986, he finished a subsequent study of Human Medicine at RWTH Aachen University with a medical degree in 1988. From 1989 to 2003 he worked successively as resident, senior consultant, chief consultant of the Clinic for Diagnostic Radiology, RWTH Aachen University Hospital (Head: Professor Dr. med. Rolf W. Günther). In 1992 he spent a research fellowship at Dotter Interventional Institute and Research Laboratory, Oregon Health Sciences University, Portland, OR, USA. After receiving habilitation in 1996 and associate professorship in 1999, he was appointed as a Full Professor (C3) for Experimental Diagnostic and Interventional Radiology of the Medical Faculty of RWTH Aachen University in 2003. Since 2005 Thomas Schmitz-Rode is Full Professor (C4) and director of the Institute of Applied Medical Engineering, which is part of the Helmholtz Institute of RWTH Aachen University.

Professor Schmitz-Rode is a member of the steering committee of the Health Technologies Network, German Academy of Science and Engineering (acatech), member of the steering committee of the National Strategy Process on Innovation in Medical Technology, vice chairman of the German Society for Biomedical Engineering and vice chairman of the Aachen Center of Competence for Medical Technology.

Among notable honors and awards there are the Wilhelm Conrad Röntgen Award of the German Röntgen Society, the Heinz Meise Award of the German Heart Foundation, the Schering Award of the Cardiovascular Interventional Radiological Society of Europe, the Intensive Care Medicine Award of the Fresenius Foundation of the German Interdisciplinary Association for Intensive Care and Emergency Medicine, and the Golden Inventor's Award of the German Röntgen Society.

Professor Schmitz-Rode is author or co-author of 224 peer-reviewed journal articles listed in NCBI/PubMed/U.S. National Library of Medicine, 10 book chapters and more than 170 patent applications and patents listed in DEPATISnet.de.

09:00 - 09:15 Coffee break

Room: Niedersachsenhalle B **Track I**

Imaging and Image Processing: Magnetic Resonance Imaging

Chairs: Lutz Trahms ((Physikalisch-Technische Bundesanstalt, DE); Thomas Schmitz-Rode (RWTH Aachen University, DE)

09:15 **A metric to ensure high image quality in parallel breast MR imaging**
Miriam Ariens (University Hospital Aachen, DE); Carsten Liess (Philips Healthcare, Hamburg, DE); Britta Kremers (University Hospital Aachen, DE); Christiane Kuhl (RWTH Aachen University, DE); Simone Schrading (University Hospital Aachen, DE)

09:30 **A distributed active NMR sensor array for artifact correction in ultra high field MRI applications**
Jonas Handwerker, Alexander Hoffmann (University of Ulm, DE); Martin Eschelbach, Klaus Scheffler (Max-Planck-Institut Tübingen, DE), Maurits Ortmanns (University of Ulm, DE) and Jens Anders (University of Ulm, DE)

09:45 **Development and Validation of a Tool for Pulse Wave Velocity Measurements in MRI Phase Contrast Data**
Anja Timmermeyer, Martin A. Koch (University of Luebeck, DE); Alex Frydrychowicz (Universitätsklinikum Schleswig-Holstein, DE)

10:00 **Visualizing Microscopic Hemorrhages with Susceptibility-Weighted Imaging (SWI) for Forensic Applications**
Adil Biber, Marius Meyer, Martin A. Koch (University of Luebeck, DE)

10:15 **Spectral editing at 7 T: In vivo GABA separation in mouse brain**
Aaron Niebergall (University of Luebeck, DE), Amir Moussavi, Jürgen Baudewig, Susann Boretius (Klinik für Neuroradiologie und Radiologie, UKSH, DE)

10:30 **Chasing the Zebra. The Quest for the Origin of a Stripe Artifact in Diffusion-Weighted MRI**
Marius Meyer, Adil Biber, Martin A. Koch (University of Luebeck, Germany)

10:45 - 11:15 Coffee break

Room: Bonatz Saal **Track J**

Magnetic Methods in Medicine

Chairs: Daniel Baumgarten (Technical University Ilmenau, DE); Tilmann Sander-Thoemmes (Physikalisch-Technische Bundesanstalt, DE)

09:15 **Simulation of magnetic nanoparticle interactions in magnetic drug targeting models**
Christoph Gordalla (RWTH Aachen, Helmholtz-Institut, DE); Anjali Röth (RWTH Aachen University Hospital, DE); Thomas Schmitz-Rode, Martin Baumann, Ioana Slabu (RWTH Aachen University, DE)

09:30 **Detection limits of SPIO loaded mesh implants for visualization in MRI and MPI**
Miriam Ariens (University Hospital Aachen, DE); Frank Wiekhorst (Physikalisch-Technische Bundesanstalt, DE); Thomas Schmitz-Rode, Martin Baumann, Christiane Kuhl (RWTH Aachen University, DE); Carsten Liess (Philips Healthcare, DE); Lutz Trahms (Physikalisch-Technische Bundesanstalt, DE); Ioana Slabu (RWTH Aachen University, DE)

09:45 **Using ultra low field nuclear magnetic resonance (ULF NMR) with a one-dimensional vertical phase encoding for direct neuronal current detection**
Nora Hoefner, Rainer Körber (Physikalisch-Technische Bundesanstalt, DE); Jens Haueisen (Technical University Ilmenau, DE); Martin Burghoff (Physikalisch-Technische Bundesanstalt, DE)

10:00 **Multichannel MEG with microfabricated optically-pumped magnetometers**
Tilmann Sander-Thoemmes (Physikalisch-Technische Bundesanstalt, DE); Orang Alem, John Kitching (NIST, USA); Lutz Trahms (Physikalisch-Technische Bundesanstalt, DE); Svenja Knappe (NIST, USA)

10:15 **Single-Sided Magnetic Particle Imaging Scanner: System Matrix Measurement**
Ksenija Gräfe, Gael Bringout, Matthias Graeser (University of Luebeck, DE), Timo Sattel (Philips Medical Systems DMC GmbH, DE); Thorsten M. Buzug (University of Luebeck, DE)

10:30 **A robust and compact representation for magnetic fields in magnetic particle imaging**
Gael Bringout, Thorsten M. Buzug (University of Luebeck, DE)

10:45 **Design and Construction of a Toroidal Filter Coil for a Magnetic Particle Imaging Device**
Jan Stelzner, Matthias Graeser, Thorsten M. Buzug (University of Luebeck, DE)

10:45 - 11:15 Coffee break

Room: Blauer Saal **Track D**

FA: Biomaterialien mit Implantatbezug (1)

Chairs: Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE), Katrin Sternberg (Aesculap AG, DE)

09:15 **Abbaubare metallische Implantate: Wunsch oder Wirklichkeit?**
Regine Willumeit (Helmholtz-Zentrum Geesthacht, DE)

09:30 **Dezellularisierte Matrizes für das vaskuläre Tissue Engineering**
Ulrike Böer, Mathias Wilhelmi (Hannover Medical School, DE)

09:45 **Potential von textilen Materialien für die Biomedizintechnik**
Stefan Jockenhoevel (RWTH Aachen University & Helmholtz Institute for Biomedical Engineering, DE)

10:00 **Zell-Biomaterial-Interaktion zur Biokompatibilitätsbewertung von Implantaten**
B. Nebe (University of Rostock, DE))

10:45 - 11:15 Coffee break

Room: Roter Saal **Track P**

FS: Advances in Electrode Development

Chairs: Thomas Stieglitz (Albert-Ludwigs-University Freiburg; Institut für Mikrosystemtechnik, DE); Boris Chichkov (Laser Zentrum Hannover e.V., DE)

09:15 **Electrical Stimulation approaches to support peripheral nerve regeneration**
Kirsten Haastert-Talini, Claudia Grothe (Hannover Medical School, DE)

09:30 **Functionalization of microstructured stimulation electrodes**
Elena Fadeeva, Sabrina Schlie-Wolter (Laser Zentrum Hannover e V Germany, DE); Gerrit Paasche, Thomas Lenarz (Medical School Hannover, DE); Boris Chichkov (Laser Zentrum Hannover e.V., DE)

09:45 **PEDOT-CNT microelectrodes for advanced recording, stimulation and sensing**
Ramona Samba, Paolo Cesare, Udo Kraushaar (NMI, Natural and Medical Sciences Institute at the University Tuebingen, DE); Sebastian Reinartz (Technion, ISR); Alfred Stett, Martin Stelzle (NMI Natural and Medical Sciences Institute at the University of Tuebingen, DE)

10:00 **Insertion of a cochlear implant electrode with shape memory properties into the inner ear for nerve-close position**
Omid Majdani, Lenka Prielozny (Hannover Medical School, DE); Nick Pawsey, Frank Risi (Cochlear ltd., Australia); Thomas Lenarz, Thomas S. Rau (Hannover Medical School, DE)

10:15 **Online monitoring of neuroinflammation induced by chronic implanted microelectrode using a fiber-based OCT**
Yijing Xie, Nadja Martini, Christina Hassler, Robert Kirch (University of Freiburg, DE); Thomas Stieglitz (Albert-Ludwigs-University Freiburg & Institut für Mikrosystemtechnik, DE); Ulrich Hofmann (Uniklinik Freiburg, DE)

10:30 **Polymer electrodes for drug release during stimulation**
Maria Asplund (Albert-Ludwigs University Freiburg & Freiburg Institute of Advanced Studies FRIAS, DE); Christian Boehler (Freiburg Institute for Advanced Studies-FRIAS, University of Freiburg, DE); Stefanie Heizmann (Albert-Ludwigs University Freiburg, DE); Ulrich Egert (University Freiburg & Bernstein Center Freiburg, DE); Ulrich Hofmann (Uniklinik Freiburg, DE); Thomas Stieglitz (Albert-Ludwigs-UniversityFreiburg & Institut für Mikrosystemtechnik, DE)

10:45 - 11:15 Coffee break

Thursday, October 9, 2014 • 09:15 - 10:45

Room: Konferenz Raum 7+9 **Track L**

FS: Automation in Medical Technology

Chairs: Thomas Schauer (Technical University Berlin, DE); Olaf Simanski (Hochschule Wismar, DE)

09:15 **Automation of medical systems – Current techniques, limitations and challenges**
Berno J.E. Misgeld (RWTH Aachen University, DE); Thomas Schauer (Technical University Berlin, DE); Olaf Simanski (Hochschule Wismar, DE)

09:30 **Online Gait Phase Detection with Automatic Adaption to Gait Velocity Changes Using Accelerometers and Gyroscopes**
Thomas Seel, Lucian Landgraf , Victor Cermeño Escobar, Thomas Schauer (Technical University Berlin, DE)

09:45 **Identification of a plant model for the control of arterial blood pressure during normothermic ex-vivo kidney perfusion**
Marian Gransow, Susanne Koch, Florian Tetschke, Christine Thiele, Hagen Malberg (Technical University Dresden, DE)

10:00 **Model-based Control Approach for a CPAP-Device**
Mathias Scheel (Hoffrichter GmbH / Hochschule Wismar, DE); Andreas Berndt, Rasmus Kölln (Hoffrichter GmbH, DE); Alexander Sievert (University of Rostock, DE); Olaf Simanski (Hochschule Wismar, DE)

10:15 **Linear affine lung mechanics model with emphasis on pleural dynamics**
Chuong Ngo (RWTH Aachen University & Helmholtz-Institute for Biomedical Engineering, DE); Berno J.E. Misgeld (RWTH Aachen University, DE); Thomas Vollmer (Philips Research, DE); Stefan Winter (Philips Technologie GmbH Innovative Technologies, Research Laboratories, DE); Steffen Leonhardt (RWTH Aachen, DE)

10:45 - 11:15 Coffee break

Room: Konferenz Raum 8+10 **Track C**

Biosignal Processing (2): Cardio-vascular System B

Chair: Martin Golz (University of Applied Sciences Schmalkalden, DE); Andreas Voss (University of Applied Sciences Jena, DE)

09:15 **Changed cardiorespiratory phase-coupling pattern in patients suffer-ing from schizophrenia**
Steffen Schulz (University of Applied Sciences Jena, DE); Jens Haueisen (Technical University Ilmenau, DE); Karl Jürgen Bär (University Hospital, Jena, DE); Andreas Voss (University of Applied Sciences Jena, DE)

09:30 **Choosing the best rhythmical and morphological features for a QRS complex classification algorithm**
Robert Menges, Gustavo Lenis, Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

09:45 **Discriminating Healthy Condition from Heart Failure using Relevance-weighted Features of Heart Rate Variability**
Christian Heinze, David Sommer (University of Applied Sciences Schmalkalden, DE); Udo Trutschel (Institute of System Analysis and Applied Numerics, DE); Martin Golz (University of Applied Sciences Schmalkalden, DE)

10:00 **Analysis of local activation times and complexity in the intracardiac electrograms**
Bhawna Verma, Tobias Oesterlein (Karlsruher Institut für Technologie (KIT), DE); Armin Luik, Claus Schmitt (Städtisches Klinikum Karlsruhe, DE); Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

10:15 **Flexible sensor for pulse rate measurement under moving conditions**
Sebastian Guttke, Matthias Laukner, Patrick Weber (Leipzig University of Applied Sciences, DE)

10:30 **QRS detection using 5th order cumulants for ECG gated cardiac MRI**
Marcus Schmidt, Johannes W. Krug, Georg Rose (Otto von Guericke University Magdeburg, DE)

10:45 - 11:15 Coffee break

Thursday, October 9, 2014 • 09:15 - 10:45

Room: Konferenz Raum 11+13 **Track P**

Sektion Chirurgische Forschung: Medizinische Implantate – Bedarf der Kliniker und Wünsche an die Ingenieure / Entwickler

Chair: Peter Vogt (Medical School Hannover, DE)

09:15 **Einführung**
Kurzreferate

09:20 **Allgemein- und Viszeralchirurgie**
Prof. Dr. René H. Tolba, RWTH Aachen

09:29 **Kinderchirurgie**
Prof. Dr. Lutz Wünsch, Lübeck

09:38 **Herzchirurgie**
Dr. Hug Aubin, Heinrich Heine Universität, Düsseldorf

09:47 **Orthopädie u. Unfallchirurgie**
Prof. Dr. Rainer Bader, Rostock und Prof. Dr. Wolfgang Lehmann, Hamburg

09:56 **Plastische, Rekonstruktive u. Ästhetische Chirurgie**
PD Dr. Lucian Jiga, Bochum

10:05 **Thoraxchirurgie**
Prof. Dr. Erich Stoelben, Witten-Herdecke

10:14 **Gefäßchirurgie**
Prof. Dr. Th. Schmitz-Rixen, Frankfurt am Main

10:23 **Neurochirurgie**
(Dr. Paul Pakos, Universität Würzburg)

10:32 **Mund, Kiefer- u. Gesichtschirurgie**
PD Dr. Dr. Marco Kesting, München

10:45 - 11:15 Coffee break

Room: Konferenz Raum 12+14 [in German] **Track F**

FS: Navigation for surgical interventions: Systems and procedures

Chairs: Hartmut Dickhaus (University of Heidelberg, DE); Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE)

09:15 **Navigation from the surgeon's point of view - the needs and the nice to have**
Hannes Kenngott, Beat Müller-Stich (University of Heidelberg, DE)

09:30 **In vivo evaluation of electromagnetically navigated bronchoscopy**
Ingmar Gergel (German Cancer Research Center, DE)

09:45 **ORBIT - An Open X-Ray Scanner**
Erwin Keeve (Charité - Universitätsmedizin Berlin, DE)

10:00 **Modern Medical Imaging in Radiology**
Martin Fiebich (Technische Hochschule Mittelhessen, DE)

10:15 **Multimodality Navigation in Neurosurgery**
Miriam H. A. Bauer (Philipps-University Marburg, DE)

10:45 - 11:15 Coffee break

Room: Runder Saal

Poster Session Tracks M and K

Chair: Petra Knaup (University Heidelberg, DE)

Room: Runder Saal 09:15 - 10:19 **Track M**

Poster Session: Modelling and Simuation

P-M 01
09:15 **Reconstruction of Left Ventricular Active Tension Distribution from Wall Motion – Simulation Study of the Inverse Problem of Cardiac Mechanics**
Thomas Fritz, Olaf Doessel, Gunnar Seemann (Karlsruhe Institute of Technology (KIT), DE)

P-M 02
09:19 **Simulation and measurement of chromatic aberration reduction with diffractive-refractive hybrid lenses for medical applications**
Wolfgang Brezna, Kirsten Lux, Nikolaus Dragostinoff (Integrated Microsystems Austria GmbH, AUS); Gila Jung (Croma Pharma GmbH, AUS)

P-M 03
09:23 **Modeling endogenous glucose production for model-based tight glycaemic control in the neonatal intensive care unit**
Jennifer Dickson, James Hewett, Christopher Pretty, Cameron Gunn (University of Canterbury, NZ); Adrienne Lynn, Geoffrey Shaw (Christchurch Hospital, NZ); Geoff Chase (University of Canterbury, NZ)

P-M 04
09:27 **Mutually decoupled self-resonant local coil array**
Sebastian Martius (Siemens AG, DE); Christopher Stumpf (Friedrich-Alexander-University Erlangen-Nürnberg, DE); Andreas Fackelmeier (Siemens AG, DE); Johanna Schöpfer (Friedrich-Alexander-University Erlangen-Nürnberg & Siemens Corporate Technology, DE); Robert Rehner, Markus Vester (Siemens AG, DE)

10:45 - 11:15 Coffee break

P-M 05
09:31 **Model based Prediction of Performance Change Introducing a Customised Barcode System in an Academic Laboratorial Workflow**
Mark Bukowski (RWTH Aachen University & Institute of Applied Medical Engineering AME, DE); Frederik Klöckner (Institute of Applied Medical Engineering, RWTH Aachen, DE); Julia Frese (RWTH Aachen University, DE); Christoph Quix (Fraunhofer Institute for Applied Information Technology FIT & St. Augustin, DE); Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE); Robert Farkas (RWTH Aachen University & Institute of Applied Medical Engineering AME, DE)

P-M 06
09:35 **Biomechanical Characterisation of Scaffold-free Cartilage Constructs with Dynamic Mechanical Analysis**
Thomas Reuter, Igor Ponomarev (fzmb GmbH, DE)

P-M 07
09:39 **Orthotropic material parameters of short-fiber-filled epoxy cylinders as alternative test material for cortical bone**
Robert Wendlandt, Matthias Schlitzke, Annette Sitzer, Arndt Schulz (University Medical Center Schleswig-Holstein, DE)

P-M 08
09:43 **Design of an Optical Transcutaneous Forward Data Telemetry for Brain Machine Interface**
Tianyi Liu, Jens Anders, Maurits Ortmanns (University of Ulm, DE)

P-M 09
09:47 **Real-Time Source Localization using Minimum Norm Estimation and Region of Interest Clustering**
Christoph Dinh (Ilmenau University of Technology & Jena University Hospital, DE); Daniel Strohmeier, Lorenz Esch, Daniel Baumgarten (Ilmenau University of Technology, DE); Matti S Hämäläinen (MGH Hospital, USA); Jens Haueisen (Technical University Ilmenau, DE)

P-M 10
09:51 **Distribution of the ventilatory pressure in high-frequency oscillatory ventilation in the anatomically based model of the respiratory system**
Martin Rožánek, Ondřej Hajný, Michal Čech (Czech Technical University in Prague, CZ)

10:45 - 11:15 Coffee break

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P-M 11
09:55 **Influence of the electrode-electrolyte interface on the electric field in Deep Brain Stimulation**
René Peter Bremm (Trier University of Applied Sciences, DE); Florian Bernard, Andreas Husch (Centre Hospitalier de Luxembourg, LUX); Heinrich Neb, Peter Gemmar, Klaus Peter Koch (Trier University of Applied Sciences, DE); Frank Hertel (Centre Hospitalier de Luxembourg, LUX)

P-M 12
09:59 **Distribution of pressure and volume in multicompartment model of lung during mechanical ventilation**
Ondřej Hajný, Martin Rožánek (Czech Technical University in Prague, CZ)

P-M 13
10:03 **Intracranial Pressure Declines During Cardiopulmonary Resuscitation in Animal Model**
Martin Mayer, Mikulas MIcek, Matej Hrachovina, Karel Jelen (Charles University, CZ)

P-M 14
10:07 **Measuring and evaluating system designed for high frequency oscillatory ventilation monitoring**
Karel Roubik (Czech Technical University in Prague & Faculty of Biomedical Engineering, CZ)

P-M 15
10:11 **Modelling and Simulation of a Thermal-Time-of-Flight (TToF) Sensor for measuring the blood flow velocity**
Sven Ebschke, Jonas Gerwinn, Anand Patel, Klaus Kallis, Horst Fiedler (Technical University of Dortmund, DE)

P-M 16
10:15 **Comparison of interferometric measurement of a ballistic pressure pulse source with simulations using the spatial impulse response method and acoustic measurements**
Abtin Jamshidi Rad, Friedrich K.W. Ueberle (University of Applied Sciences, Hamburg, DE)

10:45 - 11:15 Coffee break

Room: Runder Saal 10:20 - 10:45 **Track K**

Poster Session: Medical Information Svstems. Telemedicine, eHealth, mHealth

P-K 01
10:20 **Electro-Optical Cardiovascular Diagnostic Assistant in Portable Pocket-Sized Format for Ubiquitous Applications**
Ying Zhao (University of Applied Sciences Wuerzburg-Schweinfurt, DE); Matthias Mend (University of Applied Sciences Wuerzburg-Schweinfurt & Institute of Medical Engineering, DE); Thomas Bischof, Benedikt Kessler, Walter Kullmann (University of Applied Sciences Wuerzburg-Schweinfurt, DE)

P-K 02
10:24 **A multisine signal generator based on FPGA for broadband bioimpedance spectroscopy**
Yuxiang Yang (Xi'an University of Technology, CHN)

P-K 03
10:28 **Secure Mobile Communication Systems for Telemedical Stroke Care - From Theory to Practice**
René Hempel (Institut für Automation und Kommunikation e.V., DE);Franziska Wolf (Otto-von Guericke University Magdeburg & Institut für Automatisierungstechnik (IFAT), DE)

P-K 04
10:32 **Development of a Telemonitoring System for Improved COPD Care**
Markus Kaiser, Björn Schwarz (Technische Hochschule Mittelhessen – University of Applied Sciences, DE); Ljudmila Mursina (Technische Hochschule Mittelhessen – University of Applied Sciences & Competence Centre for Information Technology, DE); Volker Gross, Henning Schneider, Keywan Sohrabi (Technische Hochschule Mittelhessen – University of Applied Sciences, DE)

P-K 05
10:36 **A Concept for Semi-Automatic Generation of Digital Patient Models**
Kerstin Denecke (University of Leipzig, DE); Mario Cypko, Yihan Deng (ICCAS, DE)

P-K 06
10:40 **Optimal Adaptive Wireless Body Area Networks for High Speed mHealth Services**
Miftadi Sudjai, Le Chung Tran (University of Wollongong, AUT); Farzad Safaei (ICT Research Institute, University of Wollongong, AUT); Son Lam Phung (University of Wollongong, AUT)

10:45 - 11:15 Coffee break

Room: Niedersachsenhalle B **Track I**

Imaging and Image Processing: Image Analysis and processing (2)

Chairs: Hartmut Dickhaus (University of Heidelberg, DE); Werner Korb (Hochschule für Technik, Wirtschaft und Kultur (HTWK) Leipzig, DE)

11:15 **Signal Chain Optimization in Magnetic Particle Imaging**
André Behrends, Matthias Graeser, Jan Stelzner, Thorsten M. Buzug (University of Luebeck, DE)

11:30 **Correction of image artifacts caused by refractive cylindrical surfaces in Scanning Laser Optical Tomography**
Georgios Antonopoulos (Laser Zentrum Hannover e.V., DE); Dimitri Pscheniza (Hannover Medical School, DE), Raoul Lorbeer, Marko Heidrich (Laser Zentrum Hannover, DE); Kristin Schwanke, Robert Zweigerdt (Hannover Medical School, DE); Tammo Ripken, Heiko Meyer (Laser Zentrum Hannover, DE)

11:45 **Multimodal Image Segmentation of Cellular Fragmentation Using Edge Detector and Morphological Operators**
Arif ul Maula Khan, Carsten Weiss, Brigitte Schweitzer, Iris Hansjosten, Ralf Mikut, Markus Reischl (Karlsruhe Institute of Technology, DE)

12:00 **New Approach for 3D Reconstruction of Femur using 2D Conventional X-Ray Images**
Ehsan Jamshidi, Udo Nackenhorst (Leibniz University Hannover, DE)

12:15 **Sparse recovery for 3D electrical impedance tomography involving large number of finite elements: A simulation study**
Ashkan Javaherian (Institute of Technical Medicine (ITEM), DE); Benjamin Schullcke (Furtwangen University, DE); Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE)

12:30 **Cross-correlation based detection of nanoparticles in SEM images from sedimentation cell experiments**
Michael Simon, Eike M Wülfers, Antoine Tavernier, Susanne Fritsch-Decker, Erich Müller, Jürgen Seiter, Carsten Weiss, Olaf Doessel, Dagmar Gerthsen, Gunnar Seemann (Karlsruhe Institute of Technology (KIT), DE)

12:45 - 13:45 Lunch break

Room: Bonatz Saal **Track F**

CURAC special session „Digital Operating Room"

Chair: Thomas Neumuth (University of Leipzig, DE)

11:15 **Current and past on OR infrastructure in DACH**
Markus Birkle (Universitätsklinikum Heidelberg, DE)

11:30 **Concepts and requirements for an advanced clinic-wide Operating Room Control Center**
Marianne Maktabi (University of Leipzig, DE), Max Rockstroh (Innovation Center Computer Assisted Surgery, University of Leipzig, DE); Juliane Neumann, Thomas Neumuth (University of Leipzig, DE)

11:45 **Communication and Data Model in a Medical Service Oriented Architecture**
Timm Bußhaus, David Gregorczyk, Stefan Fischer (University of Luebeck, DE)

12:00 **Man-machine interfaces in the operating room**
Julia Benzko, Armin Janß, Jasmin Dell'Anna, Klaus Radermacher (RWTH Aachen, DE)

12:15 **Real time requirements in the digital OR**
Armin Schneider (Klinikum Rechts der Isar der TU München, DE), Dirk Wilhelm (Technical University Munich, DE); Michael Kranzfelder (Klinikum Rechts der Isar der TU München, DE)

12:30 **A framework for event-driven surgical workflow assistance**
Stefan Franke, Thomas Neumuth (University of Leipzig, DE)

12:45 - 13:45 Lunch break

Room: Room: Blauer Saal **Track P**

FA: Degradable Implantate auf der Basis von Polymeren und Metallen

Chair: Thomas Lenarz (Medical School Hannover, DE)

11:15 **Biocompatibility of MgF2-coated MgNd2 alloys in contact with nasal mucosal tissue – in vivo approach**
Martin Durisin, Constantin Weber (Medical University Hannover, DE); Nina Angrisani (University of Veterinary Medicine Hannover, Foundation, DE); Jan-Marten Seitz, Rainer Eifler, Hans Jürgen Maier (Leibniz University Hannover, DE); Thomas Lenarz (Hannover Medical School, DE)

11:30 **Bioresorbierbare Koronar-Scaffolds aus Magnesium**
Boris Warnack (BIOTRONIK AG, Switzerland)

11:45 **Die MAGNEZIX Compression Screw - Das erste Magnesium Implantat mit Europäischer CE-Zulassung**
Arne Lucas (Syntellix AG, DE)

12:00 **Degradable Beschichtungen von Cochlea-Implant-Elektroden**
Hubert Löwenheim (Medical University Tuebingen, DE)

12:45 - 13:45 Lunch break

Room: Roter Saal **Track P**

FS – Hearing4All – Hörimplantate

Chair: Andreas Buechner (Medical University of Hannover, DE)

11:15 **Effect of dynamic range and location on temporal pitch perception of cochlear implant users**
Richard Penninger (Medical University of Hannover, DE); Charles Limb (Johns Hopkins School of Medicine, USA); Ingeborg Dhooge (University Hospital Ghent, BEL); Andreas Buechner (Medical University of Hannover, DE)

11:30 **How to measure CI performance objectively by using EEG**
Mareike Finke, Pascale Sandmann, Andreas Buechner (Medical University of Hannover, DE)

11:45 **Objective metric parameters in Cochlear Implant imaging in comparison to hearing performance**
Waldemar Würfel, Andreas Buechner, Thomas Lenarz (Hannover Medical School, DE)

12:00 **Development of a model of the electrically stimulated auditory nerve**
Waldo Nogueira, Andreas Buechner, Waldemar Würfel (Hannover Medical School, DE)

12:15 **Consideration of Temporal Masking in Cochlear Implant Speech Processing Strategies: the TPACE Strategy**
Eugen Kludt, Thomas Lenarz, Andreas Buechner (Medical University of Hannover, DE)

12:30 **Effect of pulse rate on loudness growth functions in cochlear implant users**
Gunnar Geißler (Medical University of Hannover, DE); Matthias Hey, Britta Böhnke (University Medical Center Schleswig-Holstein, DE); Stefan Fredelake, Caroline Frohne-Büchner (Advanced Bionics GmbH – European Research Center, DE); Andreas Buechner (Medical University of Hannover, DE); Joachim Müller-Deile (University Medical Center Schleswig-Holstein, DE)

12:45 - 13:45 Lunch break

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Room: Konferenz Raum 7+9 **[in English]** **Track E**

FS: Detection, Prevention and Therapy of Accidental Hyperthermia

Chairs: Michael Imhoff (Ruhr-University Bochum, DE); Jens Mühlsteff (Philips Research Europe, DE)

11:15 **Accidental hyperthermia outsite the clinical setting**
Hanns-Christian Gunga (Charité - Universitätsmedizin Berlin, DE)

11:45 **Identification and quantising hyperthermia**
Jochim Koch (Drägerwerk AG & Co. KGaA, DE)

12:00 **Thermomanagement, prevention and prophylaxis of nonexertional hyperthermia ("heat stroke")**
Karl-Peter Ittner (Universitätsklinikum Regensburg, DE)

12:30 **Future Concepts in Thermomanagement of Accidental Hyperthermia**
Michael Imhoff (Ruhr-University Bochum, DE)

12:45 - 13:45 Lunch break

Room: Konferenz Raum 8+10 **Track C**

Biosignal Processing (3): Miscellaneous Topics

Chair: Werner Wolf (Universität der Bundeswehr München, DE); Thomas Felderhoff (University of Applied Sciences and Arts Dortmund, DE)

11:15 **Comparison of EEG-Based Measures of Driver Sleepiness**
Martin Golz, David Sommer (University of Applied Sciences Schmalkalden, DE); Britta Geissler, Axel Muttray (Johannes Gutenberg University of Mainz, DE)

11:30 **An Open Source Toolbox for Online EEG/MEG Data Processing and Source Imaging**
Christof Pieloth (HTWK Leipzig, University of Applied Sciences, DE); Thomas Knösche (MPI Leipzig, DE); Burkhard Maess (Max Planck Institute for Human Cognitive and Brain Sciences, DE); Mirco Fuchs (HTWK Leipzig, University of Applied Sciences, DE)

11:45 **The multitrode-effect influences the spike sorting performance: a simulation study**
Christopher Doerr, Thomas Schanze (Technische Hochschule Mittelhessen THM, DE)

12:00 **Evaluation of EMG signal variations during intraoperative neuromonitoring in ENT surgical procedures**
Oliver Weihberger, Anna Skurczyńska, Thilo Krüger (Inomed Medizintechnik GmbH, DE)

12:15 **Lung stabilizing effects of FLow controlled EXpiration (FLEX) in a porcine model of lung injury**
Stefan Schumann, Ulrich Goebel (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, DE); Jörg Haberstroh, Josef Guttmann (University Hospital Freiburg, DE)

12:30 **Feasibility of an Asynchronous Event Related Desynchronization based Brain Switch for control of Functional Electrical Stimulation**
Andrej Savić (University of Belgrade - School of Electrical Engineering & Tecnalia Serbia Ltd., SRB)

12:45 - 13:45 Lunch break

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Room: Konferenz Raum 11+13 **Track P**

Sektion Chirurgische Forschung: Impulsreferate zum Thema European Medical Device Directive, anschließend Roundtable-Diskussion mit allen Referenten und dem Auditorium

Chair: Peter Vogt (Medical School Hannover, DE)

11:15 **Die Directive aus Sicht des BVMed**
Dr. Manfred Elff, Berlin

11:40 **Die Directive aus Sicht des Klinikers**
Prof. Christian Krettek, Hannover

12:05 **Roundtable-Diskussion**

12:45 - 13:45 Lunch break

Room: Konferenz Raum 12+14 [in German] **Track K**

FS: Interoperability between e-health Devices

Chairs: Johannes Dehm (VDE Verband der Elektrotechnik Elektronik Informationstechnik e. V., DE); Uwe Marschner (Technical University Dresden, DE); Bernhard Clasbrummel (Chirurgische Privatpraxis Bernhard Clasbrummel, DE)

11:15 **Interoperabilität innerhalb und außerhalb der Klinik**
Johannes Dehm (VDE MedTech, DE)

11:30 **Drahtlose Signalübertragung zur Steuerung einer Handprothese**
Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE), Roman Ruff (Fraunhofer Institute for Biomedical Engineering, DE); Josep Cardona (IBMT, DE); Alexander Gail (German Primate Center, DE); Michael Russold (Otto Bock Healthcare Products GmbH, AUT); Hans Dietl (Otto Bock HealthCare GmbH, DE)

11:50 **Wirksamkeit klinischer telemedizinischer Anwendungen**
Friedrich Koehler (Charité - Universitaetsmedizin Berlin, DE)

12:10 **Einsatz telemedizinischer Lösungen im Heimbereich**
Birgid Eberhardt (Tellur Gesellschaft für Telekommunikation, DE)

12:45 - 13:45 Lunch break

Room: Runder Saal

Poster Session Tracks J, SFB and Q

Chairs: Jens Haueisen (Ilmenau University of Technology, DE); Lutz Trahms (Physikalisch-Technische Bundesanstalt, DE)

Room: Runder Saal 11:15 - 12:45 **Track J**

Poster Session: Magnetic Methods in Medicine

P-J 01
11:15 **Data acquisition system with 200 kHz sampling rate for new designs of biomagnetic signal detection**
Wolfgang Müller (Physikalisch-Technische Bundesanstalt, DE); Svenja Knappe (NIST, USA); Tilmann Sander-Thoemmes, Martin Burghoff (Physikalisch-Technische Bundesanstalt, DE)

P-J 02
11:19 **A local TX Coil for 3T shoulder imaging**
Johanna Schöpfer (Friedrich-Alexander-University Erlangen-Nürnberg & Siemens Corporate Technology, DE); Klaus Huber, Stephan Biber, Sebastian Martius (Siemens AG, DE)

P-J 03
11:23 **A Cotton-Mouton Spectrometer with Optimized Field Cancellation Using n-MOSFET-Based Current Switching**
Robert Knobloch, Christina Debbeler, Kerstin Lüdtke-Buzug (University of Luebeck, DE)

P-J 04
11:27 **Magnetorelaxation of superparamagnetic nanoparticles studied by atomic magnetometry**
Victor Lebedev, Vladimir Dolgovskiy, Simone Colombo, Benjamin Michen, Alke Fink, Antoine Weis (University of Fribourg, CH)

P-J 05
11:31 **Superparamagnetic Coatings for Magnetic Particle Imaging**
Kerstin Lüdtke-Buzug, Christina Debbeler (University of Luebeck, DE)

P-J 06
11:35 **T vector cardiography for detection of patients after myocardial infarction**
Matthias Goernig (University Hospital of Jena, DE)

P-J 07
11:39 **Assessing the applicability of electromagnetic tracking for maxillofacial and orthopaedic surgery**
Christoph Auer, Sebastian Kallus, Igor Nova, Urs Eisen-

12:45 - 13:45 Lunch break

mann, Hartmut Dickhaus (University of Heidelberg, DE)

Room: Runder Saal 11:15 - 12:45 **Track** P

Poster Session: SFB 599

P-P.SFB 01
11:43 **Influence of immobilization chemistry on the activity of antimicrobials**
Marco Waßmann (Technical University Braunschweig, DE)

P-P.SFB 02
11:47 **Development of an ear-drum pad based on silicones with incorporated nanoporous silica nanoparticles**
Tanja Heemeier, Mandy Jahns, Songül Noyun, Laura Doniga-Crivat, Silke Besdo, Peter Behrens (Leibniz University Hannover, DE)

P-P.SFB 03
11:51 **An enhanced 3D Model of the human middle ear**
Susanne Bradel (Hannover Medical School, DE); Laura Doniga-Crivat, Silke Besdo (Leibniz University Hannover, DE); Gudrun Brandes (Medical School Hannover, DE); Michael Fehr (University of Veterinary Medicine Hannover, DE), Nils Prenzler, Thomas Lenarz (Medical School Hannover, DE)

P-P.SFB 04
11:55 **Quantitative analysis of spiral ganglion neuron survival and neurite sprout on PDMAA, PEtOx and PMTA**
Kirsten Wissel (Medical School Hannover, DE)

P-P.SFB 05
11:59 **Multifuctionalized nanoporous silica nanoparticles for tooth regeneration**
Alexandra Satalov (LUH ACI, DE), Marina Steindorff , Eva Gellermann, Henning Hartwig, Meike Stiesch (Medical School Hannover, DE); Peter Behrens (Leibniz University Hannover, DE)

P-P.SFB 06
12:03 **Triggered Release of Chlorhexidine from Nanoporous Silica Nanoparticles as fillers in Dental Composites**
Hendrik Fullriede (Leibniz University Hannover, DE); Nico Timpe (Technical University Braunschweig, DE); Lothar Borchers, Sebastian Grade, Katharina Doll, Joern Schaeske, Meike Stiesch (Hannover Medical School, DE); Henning Menzel (Techniscal University Braunschweig, DE); Peter Behrens (Leibniz University Hannover, DE)

12:45 - 13:45 Lunch break

P-P.SFB 07
12:07 **In vitro and in vivo evaluation of magnesium-containing layered double hydroxides as implant materials**
Marc Kieke (Leibniz UniversityHannover, DE); Andreas Weizbauer, Franziska Duda (Hannover Medical School, DE); Muhammad Rahim (Helmholtz Centre for Infection Research, Braunschweig & Technical University of Braunschweig, DE); Philip Dellinger (Leibniz University Hannover, DE), Stefan Budde, Thilo Flörkemeier, Julia Diekmann, Nils Prenzler (Medical School Hannover, DE); Muhammad Badar, Peter P Mueller, Hansjörg Hauser (Helmholtz Centre for Infection Research, DE); Sabine Behrens, Friedrich-Wilhelm Bach, Hans Jürgen Maier (Leibniz University Hannover, DE); Thomas Lenarz, Henning Windhagen (Hannover Medical School, DE); Peter Behrens (Leibniz University Hannover, DE)

P-P.SFB 08
12:11 **In Vivo imaging of biomaterial associated inflammation and infection**
Bushra Rais (Helmholtz Centre for Infection Research, RDIF, DE)

P-P.SFB 09
12:14 **Protective coatings on metallic magnesium to limit hydrogen generation**
Muhammad Rahim (Helmholtz Centre for Infection Research, Braunschweig & Technical University of Braunschweig, DE)

Room: Runder Saal 12:18 - 12:25 **Track** Q

Poster Session: Training and Further Education

P-Q 01
12:18 **Mannequin based education of biomedical engineers - effects of spontaneous breathing and mechanical ventilation upon other parameters**
Martin Rožánek, Petr Kudrna, Gabriela Duhárová, Lucie Roškotová, Tereza Antošová (Czech Technical University in Prague, CZ)

P-Q 02
12:22 **Towards Realistic Haptic Organ Phantoms for Medical Training**
Max Froehlich, Michael Strohmayr, Ulrich Seibold (German Aerospace Center - DLR, DE); Erhard Krampe, Erich Wintermantel (Technical University Munich, DE)

12:45 - 13:45 Lunch break

Room: Niedersachsenhalle B

Keynote 4

13:45 **FES-Supported Restoration of Movement: from Biological Bracing to Modulation of Central Neuronal Control Networks**
Prof. DDr. Winfried Mayr, Center for Medical Physics and Biomedical Engineering, Medical University of Vienna

Winfried Mayr studied Electrical Engineering with specialization on Electronics and Control Engineering at the Technical University in Vienna graduating in 1983. He received his Ph. D. on the topic "Reactivation of Paralyzed Muscles by Electrical Stimulation via Implants" from the same university in 1992, after years of interdisciplinary research in the clinical environment of the 2nd Surgical University Clinic at the Medical Faculty of the Vienna University. 1997 he became Assistant Professor at the Institute of Biomedical Engineering and Physics and head of the research group "Clinics Co-operations", 2001 Associate Professor on Biomedical Engineering and Rehabilitation Technology. In 2010 he received a honorary doctorate from the Technical University of Klausenburg/ Cluj-Napoca. His current responsibilities include the research domain "Clinic related Translational Research and viennaFES", Neuroprosthetics and Rehabilitation Engineering at the Center for Medical Physics and Biomedical Engineering of the Vienna Medical University.
Actual research of his group focuses on technology and application of active (FES, biotelemetry and electro-mechanical) and passive implants (long-term stability and controlled degradation), limb prostheses and FES for restoration of movement in central and peripheral (denervated muscles) paralysis, spinal cord stimulation and mobility support for elderly - in close collaboration with clinical and industrial partners and basic sciences.
He is co-ordinator of the "Vienna Program for Restoration of Movement" (VPRM), section editor for Functional Electrical Stimulation (FES) of the journal "Artificial Organs" and (co-) organizer of the triennial "Vienna International Workshop on Functional Electrical Stimulation" since the first edition in 1983, which is well established in the field and hosted the foundation of the "International Electrical Stimulation Society" (IFESS) in 1995. Since 2009 he chairs the "Austrian Society of Biomedical Engineering" (ÖGBMT).

14:15 - 14:30 Coffee break

Room: Niedersachsenhalle B **Track H**

FS: MR Safety of medical devices

Chairs: Gregor Schaefers (MR:comp GmbH, DE); Andreas Melzer (University of Dundee, United Kingdom)

14:30 **Introduction to MR safety**
Andreas Melzer (University of Dundee, UK)

14:45 **MR safety for the Anesthetist**
Hartmut Gehring (University of Luebeck & University Hospital Schleswig-Holstein, DE)

15:00 **MRI guided Neurosurgery, Integrating OR and MR**
Arya Nabavi (International Neuroscience Institute, Hannover, DE)

15:15 **MR safety issues with middle ear and cochlea implants**
Thomas Lenarz (Medical School Hannover, DE)

15:30 **MR safety of pace maker and neurostimulators, ISO/TS 10974 related testing issues**
Gregor Schaefers (MR:comp GmbH, DE)

15:45 **MR safety for MR guided Diagnostic and Interventional Procedures**

16:00 - 16:30 Coffee break

Room: Bonatz Saal **Track P**

SFB 599: Resorbierbare Implantate

Chairs: Axel Haverich (Medical School Hannover, DE); Birgit Glasmacher (Leibniz University Hannover, DE)

14:30 **Development and Manufacturing of Magnesium Interference Screws**
Patrick Helmecke, Britta Hering, Berend Denkena (Leibniz University Hannover, DE)

14:45 **Machining of Magnesium Implants**
Britta Hering (Leibniz Universität Hannover, DE), Patrick Helmecke (Leibniz Universität Hannover, DE) and Berend Denkena (Leibniz Universität Hannover, DE)

15:00 **Bioabsorbable magnesium-based (MgYREZr-alloy) interference screws with different threads: Biomechanical characteristics**
Marco Ezechieli (Medical School Hannover, DE)

15:15 **Evaluation of degradation and biocompatibility of a magnesium based intramedullary nailing system in sheep model**
Christina Rössig, Nina Angrisani (University of Veterinary Medicine Hannover, Foundation, DE); Markus Badenhop (Hannover Medical School, DE); Patrick Helmecke, Jan-Marten Seitz, Silke Besdo (Leibniz University of Hannover, DE), Janin Reifenrath (University of Veterinary Medicine Hannover, DE)

15:30 **Degradation behaviour of LAE442-based plate-screw-systems in an in vitro bone model**
Leonie Wolters, Nina Angrisani (University of Veterinary Medicine Hannover, Foundation, DE); Britta Hering, Jan-Marten Seitz, Silke Besdo (Leibniz University Hannover, DE); Janin Reifenrath (University of Veterinary Medicine Hannover, DE)

15:45 **In vivo study of a biodegradable nasal stent (MgF2-coated MgNd2 alloy) in a minipig for up to six months**
Martin Durisin, Constantin Weber (Medical University Hannover, DE); Janin Reifenrath, Manfred Kietzmann (University of Veterinary Medicine Hannover, DE); Jan-Marten Seitz, Rainer Eifler, Hans Jürgen Maier (Leibniz University Hannover, DE); Thomas Lenarz (Medical School Hannover, DE)

16:00 - 16:30 Coffee break

Thursday, October 9, 2014 • 14:30 - 16:00

Room: Blauer Saal **Track A**

FA: Oberflächenfunktionalisierte Implantate

Chair: Meike Stiesch (Medical School Hannover, DE)

14:30 **Mesenchymal stem cells for the development of a biohybrid electrode**
Luisa M Schäck, Andrea Hoffmann (Hannover Medical School, DE); Anastasia Koroleva, Boris Chichkov (Laser Zentrum Hannover e.V., DE); Sandra Noack, Thomas Lenarz, Athanasia Warnecke (Medical School Hannover, DE)

14:45 **Biofabrication for NIFE - Personalised implants for the 21st century**
Thomas Scheper (Leibniz University of Hannover, DE), Sebastian Grade (Hannover Medical School, DE), Iliyana Pepelanova (Leibniz University of Hannover, DE); Meike Stiesch (Hannover Medical School, DE)

15:00 **Bioaktive lasergenerierte Implantat-Oberflächentopographien**
Boris Chichkov (Laser Zentrum Hannover e.V., DE)

15:15 **Degradable Polymerbeschichtungen für Cochlea Implantat-Elektroden**
Gerrit Paasche (Hannover Medical School, DE)

15:30 **Absorbable polymeric stent structure for regenerative percutaneous mitral valve replacement – Mechanical feasibility in vitro**
Niels Grabow, Mark Schröder, Christoph Brandt, Daniela Arbeiter, Frank Luderer, Klaus-Peter Schmitz (University of Rostock, DE)

16:00 - 16:30 Coffee break

Room: Roter Saal **Track L**

FS - Hearing4All - Audio Technology

Chair: Simon Doclo (University of Oldenburg, DE)

14:30 **Should neural nets have ears? The role of auditory features and deep learning in automatic speech recognition**
Angel M. Castro Martinez (University of Oldenburg & Hearing4all, DE); Niko Moritz (Fraunhofer IDMT-HSA, DE); Bernd Meyer (University of Oldenburg, DE)

14:45 **Using Computational Auditory Scene Analysis to Enhance the Performance of Assistive Hearing Devices**
Joachim Thiemann, Steven van de Par (University of Oldenburg, DE)

15:00 **Supervised Speech Enhancement**
Nasser Mohammadiha (University of Oldenburg & Cluster of Excellence Hearing4all, DE); Simon Doclo (University of Oldenburg, DE)

15:15 **Design Space Exploration of Hardware Architectures for Hearing Aid Devices**
Guillermo Paya-Vaya, Julian Hartig, Lukas Gerlach, Blume (Leibniz University Hannover, DE)

15:30 **Personalization of audio playback using intuitive self-fitting interfaces**
Jan Rennies, Aleksandra Maria Kubiak (Fraunhofer IDMT, DE); Simon Doclo (University of Oldenburg, DE)

15:45 **EEG to go? Towards auditory BCIs in daily life situations**
Maarten De Vos, Martin Bleichner, Stefan Debener (University of Oldenburg, DE)

Thursday, October 9, 2014 • 14:30 - 16:00

Room: Konferenz Raum 7+9 **Track D**

Cellular, Tissue and Bioengineering: Biohybrid Implants

Chair: Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

14:30 **Braided Stent Structures to Treat Trachea Stenosis**
Kathrin Kleinsteinberg, Thomas Gries (RWTH Aachen University, DE); Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

14:45 **The bioartificial, wearable lung**
Esther Novosel (Novalung GmbH, DE)

15:00 **Preliminary Results of a Biohybrid Lung Assist Concept**
Nicole Finocchiaro (RWTH Aachen University, DE); Barbara Dittrich (DWI an der RWTH Aachen e. V., DE); Jutta Arens, Ulrich Steinseifer (RWTH Aachen University, DE); Stefan Jockenhoevel, Christian Cornelissen (Helmoholtz Institute for Biomedical Engineering, RWTH Aachen, DE)

15:15 **Biomechanical, Biochemical and Histological Evaluation of Three-dimensional Scaffold-free Tissue Constructs**
Igor Ponomarev, Thomas Reuter (fzmb GmbH - Forschungszentrum für Medizintechnik und Biotechnologie, DE)

15:30 **Guided Functional Re-Engineering of the Mitral Valve Leaflets**
Lucrezia Morticelli (Hannover Medical School, DE); Daniel Thomas, John Fisher, Eileen Ingham (Institute of Medical and Biological Engineering, University of Leeds, UK); Sotirios Korossis (Hannover Medical School, DE)

14:15 - 14:30 Coffee break

Room: Konferenz Raum 8+10 **Track M**

Modelling and Simulation (2)

Chair: Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

14:30 **Influence of chronic atrial fibrillation induced remodeling in a computational electrophysiological model**
Axel Loewe, Mathias Wilhelms, Olaf Doessel, Gunnar Seemann (Karlsruhe Institute of Technology (KIT), DE)

14:45 **Effect of mesh resolution on forward calculations of the electrocardiogram in a simplified thorax model**
Walther H W Schulze, Thomas Fritz, Danila Potyagaylo, Julia Trächtler (Karlsruhe Institute of Technology (KIT), DE); Rainer Schimpf, Theano Papavassiliu, Erol Tülümen, Boris Rudic, Volker Liebe, Christina Doesch, Martin Borggrefe (University Medical Centre Mannheim, DE); Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

15:00 **Geometrical model and corresponding conductivities for solving the inverse problem of ECG**
Antonia Reinke, Danila Potyagaylo, Walther H. W. Schulze, Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

15:15 **Specific antiarrhythmic therapy for familial atrial fibrillation in a numerical model of human atrial electrophysiology**
Yannick T. Lutz , Axel Loewe, Mathias Wilhelms, Olaf Doessel, Gunnar Seemann (Karlsruhe Institute of Technology (KIT), DE)

15:30 **Synthesis and analysis models for sparse signal reconstruction in the inverse problem of ECG**
Danila Potyagaylo (Karlsruhe Institute of Technology (KIT), DE); Elisenda Cortés (EasyJet, DE), Walther H. W. Schulze, Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

16:00 - 16:30 Coffee break

Thursday, October 9, 2014 • 14:30 - 16:00

Room: Konferenz Raum 11+13 **[in English]** **Track H**

FS: Image guided interventions

Chair: Heinrich M. Overhoff (Westphalian University of Applied Sciences, DE)

14:30 **In silico model of a patient specific Aorta using 4D-MRI data simulating the hemodynamic effects of mechanical aortic valve**
Markus Bongert, Marius Geller (University of Applied Science Dortmund, DE); Werner Pennekamp, Volkmar Nicolas (University Hospital Bergmannsheil Bochum, DE)

14:45 **Raw Data Compression in Magnetic Resonance Imaging**
Sebastian Schmitt, Heinrich M. Overhoff (Westphalian University of Applied Sciences, DE)

15:00 **Artifact simulation and measurement of interventional needles in MR imaging**
Morwan Choli (MR:comp GmbH, DE); Sebastian Schmitt (Westphalian University of Applied Sciences, DE); Katharina Skopnik, Gregor Schaefers (MR:comp GmbH, DE)

15:15 **Marker Clip Detection in Ultrasound Receive Raw Data**
Pascal Holzmann (School of Life Sciences FHNW, CH), Anke Poelstra (University of Applied Sciences Gelsenkirchen, DE); Heinrich M. Overhoff (Westphalian University of Applied Sciences, DE)

15:30 **Imaging in Radiotherapy**
Uwe Haverkamp (University of Muenster, DE)

16:00 - 16:30 Coffee break

Room: Konferenz Raum 12+14 [in German] **Track L**

Miscellaneous Innovations: From Materials and Sensors to Diagnosis and Therapy

Chair: Cord Schlötelburg (VDE Verband der Elektrotechnik Elektronik Informationstechnik e.V.; DGBMT Deutsche Gesellschaft für Biomedizinische Technik im VDE, DE)

14:30 **SSVEP measurements for BCI applications with higher frequencies based on capacitive EEG**
Katharina Olze, Meinhard Schilling, Ying Su (Technical University Braunschweig, DE)

14:45 **Coating of stents with poly-L-lactide via fluidized-bed technology**
Monika Wentzlaff, Anne Seidlitz (Ernst-Moritz-Arndt-Universität Greifswald, DE); Claus Harder (Biotronik SE und Co. KG, DE); Niels Grabow (University of Rostock, DE); Werner Weitschies (Ernst-Moritz-Arndt-Universität Greifswald, DE)

15:00 **Laser-generated, catalytic nanoceria as efficient ROS scavenger**
Annette Barchanski, Csaba Sajti, Boris Chichkov (Laser Zentrum Hannover e.V., DE)

15:15 **Development and Evaluation of a Drug Multiplexing Infusion System**
Saif Abdul-Karim, Joerg Schroeter, Bodo Nestler (Luebeck University of Applied Sciences, DE)

15:30 **Are Smartphones Applicable for Posturography? A Classification Analysis Based on Computational Intelligence**
David Sommer, Adolf Schenka (University of Applied Sciences Schmalkalden, DE); Jarek Krajewski (Institute of Work and Organizational Psychology, University of Wuppertal, DE); Martin Golz (University of Applied Sciences Schmalkalden, DE)

15:45 **Tactile Textile Sensors for Collision Avoidance**
Verena Schmidt (Healthcare & Siemens AG, DE)

16:00 - 16:30 Coffee break

Room: Runder Saal

Poster Session Track A

Chairs: Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE), Katrin Sternberg (Aesculap AG, DE)

Room: Runder Saal 14:30 - 16:00 **Track A**

Poster Session: Biomaterials and Biocompatibility

P-A 01
14:30 **Nanogels for Zinc Oxide Nanoparticles Encapsulation and Their Utilization for Wound Therapy**
Philipp Nachev-Wilke (RWTH Aachen & DWI - Leibniz Institut für Interaktive Materialien, DE); Catalina Molano (DWI - Leibniz Institut für Interaktive Materialien, DE); Nina Million (Technical Chemistry I, University of Duisburg-Essen, DE); Stephan Barcikowski (University of Duisburg-Essen, DE); Andrij Pich (RWTH Aachen, DE)

P-A 02
14:34 **Improving the antibacterial effect of polyamide 12 by functionalization of titanium dioxide nano-particles**
Christin Rapp, Teresa Huppmann, Markus Eblenkamp, Johannes Gattinger, Erich Wintermantel (Technical University Munich, DE)

P-A 03
14:38 **Polymeric Hard-Soft-Combinations by Multi-Component Injection Moulding for Small Medical Devices**
Vera Seitz (Technical University Munich, DE); Marc Hoffstetter (Scholz-HTIK, DE), Miriam Haerst, Erhard Krampe, Erich Wintermantel (Technical University Munich, DE)

P-A 04
14:42 **Influence of Sol-Gel coatings on the corrosion behaviour of MgZn1 foams with 30 % porosity**
Christine Schille (University Hospital & Dental Clinic, DE); Ernst Schweizer (University Hospital of Tuebingen, DE), Joachim Baumeister (Dipl. Phys., DE); Thomas Poulsen (Consultant, Cand Scient Chemistry, DEN); H. Sohoel (Daenish Technoloical Institut, Aarhus, DEN); Juergen Geis-Gerstorfer (University Hospital, DE)

16:00 - 16:30 Coffee break

P-A 05
14:46 **Quantitative analysis of cartilage surface by confocal laser scanning microscopy**
Birgit Striegl (OTH Regensburg & Regensburg Center of Biomedical Engineering, DE); Richard Kujat (University Hospital Regensburg, DE); Sebastian Dendorfer (OTH Regensburg, DE); Michaela Huber (University Hospital Regensburg, DE)

P-A 06
14:50 **In vitro human capsulorhexis specimen viability test for assessing biocompatibility**
Christian Kastner (Rostock University Medical Center & Institute for Biomedical Engineering, DE), Klaus-Peter Schmitz (Universität Rostock, DE), Rudolf Guthoff (Universität Rostock & Universitätsaugenklinik Rostock, DE) and Marina Hovakimyan (Rostock University Medical Center, DE)

P-A 07
14:54 **Development of a Biocompatible Lubricous Coating for Biomedical Applications**
Sebastian Kaule, Philip Wahl, Niels Grabow, Klaus-Peter Schmitz, Katrin Sternberg, Svea Petersen (University of Rostock, DE)

P-A 08
14:58 **Method for Testing of Hydrogel Sensor Coatings**
Stefan Hanitsch (Technical University Ilmenau, DE); Steffi Grohmann (Institut für Bioprozess- und Analysenmesstechnik e. V., DE); Albrecht Berg (Innovent e. V. Biomaterials Department Jena, DE); Jens Moje (Moje Keramik-Implantate GmbH & Co. KG, DE); Martin Hoffmann (Technical University Ilmenau, DE)

P-A 09
15:02 **Influence of different nano-structured surface topographies on electrode impedance**
Svilen Angelov (Medical School Hannover, DE)

P-A 10
15:06 **Nitinol thin film for endovascular application**
Giorgio FM Cattaneo (Acandis GmbH & Co. KG, DE); Rodrigo Lima de Miranda (Christian-Albrechts-University Kiel & Acquandas GmbH, DE); Eckhard Quandt (Christian-Albrechts-University Kiel, DE); Gerd Siekmeyer (Admedes Schüßler GmbH, DE); Andreas Schüßler (Admedes Schüßler GmbH, DE)

16:00 - 16:30 Coffee break

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P-A 11
15:10 **Differently Functionalized Silica Nanoparticles - Cytocompatibility and Antimicrobial Effect**
Katharina Doll, Joern Schaeske (Hannover Medical School, DE); Hendrik Fullriede (Leibniz University Hannover, DE); Sebastian Grade, Sascha Nico Stumpp, Andreas Winkel (Hannover Medical School, DE); Peter Behrens (Leibniz University Hannover, DE); Meike Stiesch (Medical School Hannover, DE)

P-A 12
15:14 **Modified Chandler Loop system for dynamic hemocompatibility testing of vascular implants**
Marlon Tano Jordan, Marc Müller, Rieke Kortlepel, Birgit Glasmacher (Leibniz University Hannover, DE)

P-A 13
15:18 **Ultrahigh molecular weight polyethylene reinforced with quasicrystalline particles for biomedical applications**
Carmen Mihoc (University of Rostock & Institut für Biomedizinische Technik, DE); Klaus-Peter Schmitz (University of Rostock, DE)

P-A 14
15:22 **Study of Magnesium Degradation in Porcine Blood Plasma**
Sara Knigge, Florian Evertz, Birgit Glasmacher (Leibniz University Hannover, DE)

P-A 15
15:26 **Flocking technology for 3D textile scaffolds**
Christoph Bach, Patrick Martin (Institut für Textiltechnik der RWTH Aachen University, DE); Kathrin Kleinsteinberg, Thomas Gries (RWTH Aachen University, DE); Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

P-A 16
15:30 **Influence of fiber diameter on the hemocompatibility of small-diameter 3-layer electrospun vascular grafts**
Mohamed Amine Saidi (Leibniz University Hannover & Institute for Multiphase Processes, DE), Birgit Glasmacher, Marc Müller, Rieke Kortlepel (Leibniz University Hannover, DE)

16:00 - 16:30 Coffee break

P-A 17
15:34 **Polymer-based, biodegradable, brain-derived neurotrophic factor-containing coatings on cochlear implant electrode carriers for enhancement of spiral ganglion cell growth - investigation of drug load and degradation behaviour**
Anne Bohl, Thomas Eickner, Svea Petersen, Klaus-Peter Schmitz, Katrin Sternberg (University of Rostock, DE)

P-A 18
15:38 **Protective waistcoat for goats in a long-term animal model**
Johannes Großhauser (Charité - Universitätsmedizin Berlin, DE); Katja Reiter (BLS Germany, DE); Christian Grosse-Siestrup, Ulrich Kertzscher, Klaus Affeld (Charité - Universitätsmedizin Berlin, DE)

P-A 19
15:42 **Cross section studies of laser-structured electrodes with locally adapted thicknesses**
Matthias Mueller, Juan S. Ordonez (University of Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE); Martin Schuettler (University of Freiburg, DE)

P-A 20
15:46 **Design and evaluation of an inertial flow apparatus for dynamic blood-compatibility testing**
Patrick Brede, Sebastian Brede, Rieke Kortlepel, Benjamin Krolitzki, Birgit Glasmacher (Leibniz University Hannover, DE)

P-A 21
15:50 **Towards the development of a bioartificial lung - Endothelialisation of TiO2 coated oxygenator membranes**
Michael Pflaum (Hannover Medical School, DE); Marina Kauffeldt (University of Federal Armed Forces Munich, DE); Sabrina Schmeckebier, Bettina Wiegmann, Sotirios Korossis (Hannover Medical School, DE)

P-A 22
15:54 **Composition and ultrastructure of PDLLA nanofibers with incorporated rhBMP-2 and rhVEGF as scaffolds for tissue engineering**
Ashraf Sh. Asran, Thorsten Sänger (University Hospital Essen, DE); Markus Laub (Morphoplant GmbH, DE); Herbert Jennissen (University Duisburg-Essen, DE); Goerg Michler (Martin-Luther-University Halle-Wittenberg, DE); Sven Henning (Fraunhofer IWM, DE)

16:00 - 16:30 Coffee break

Thursday, October 9, 2014 • 14:30 - 16:00

P-A 23
15:58 **Release dynamics and biological activity of PDLLA nanofiber composites of rhBMP-2 and rhVEGF165 as scaffolds for tissue engineering**
Thorsten Sänger (University Hospital Essen, DE); Herbert Jennissen (University Duisburg-Essen, DE); Markus Laub (Morphoplant GmbH, DE); Ashraf Sh. Asran (University Hospital Essen, DE);Goerg Michler (Martin-Luther-University Halle-Wittenberg, DE)

P-A 24
16:02 **Complex bacteria-cell-implant co-culture model for implant screening**
Alexandra Ingendoh, Andreas Winkel, Sebastian Grade, Meike Stiesch, Jörg Eberhard (Hannover Medical School, DE); Thomas Scheper (Leibniz University of Hannover, DE); Henning Hartwig (Hannover Medical School, DE); Cornelia Blume (Leibniz University of Hannover, DE)

16:00 - 16:30 Coffee break

Room: Niedersachsenhalle B **Track P**

Neural repair and neural implants

Chairs: Omid Majdani (Hannover Medical School, DE); Walter-G. Wrobe (Retina Implant AG, DE)

16:30 **Improved functional outcome after implantation of purified canine glia cells in spinal cord injury**
Christine Radtke (Hannover Medical School, DE); Karen Lankford, Masanori Sasaki (Yale University School of Medicine, USA); Susanne Ziege (University of Veterinary Medicine Hannover, DE); Konstantin Wewetzer (Hannover Medical School, DE); Wolfgang Baumgärtner (University of Veterinary Medicine Hannover, DE); Jeffery Kocsis (Yale University School of Medicine, USA)

16:45 **Implantation of mesenchymal stem cells for structural regeneration of the nervous system: repair shop or pharmacy?**
Christine Radtke (Hannover Medical School, DE), Jeffery Kocsis (Yale University School of Medicine, USA), Peter Vogt, Reinhild Schnabel, Kerstin Reimers (Hannover Medical School, DE)

17:00 **A scalable multi-channel modular electrical stimulator for therapeutic field steering**
Soheil Mottaghi (University of Freiburg, DE); Thordur Helgason (Landspitali - University Hospital, ISL); Ulrich Hofmann (University Hospital Freiburg, DE)

17:15 **Retinal Implants: mechanical stresses and loads in the orbital cavity**
Walter-G. Wrobel, Martin Kokelmann (Retina Implant AG, DE)

17:30 **Modelling and Optimization of the Insertion of a Preformed Cochlear Implant Electrode Array**
Thomas S. Rau, Thomas Lenarz, Omid Majdani (Hannover Medical School, DE)

17:45 **Implant for the support of functional recovery in spinal cord trauma(paraplegia): biodegradability and integration of electrodes**
Christian Voss (Technical University Hamburg-Harburg, DE); Veronica Estrada, Nicole Brazda (Heinrich-Heine-University, DE); Andreas Schander (Technical University Hamburg-Harburg, DE); Julia Krebbers (Heinrich-Heine-University, DE); Nils Weinrich (Berufsgenossenschaftliches Unfallkrankenhaus Hamburg, DE); Jörg Müller (Technical University Hamburg-Harburg, DE); Klaus Seide (Berufsgenossenschaftliches Unfallkrankenhaus Hamburg, DE); Hans Werner Müller (Heinrich-Heine-University, DE); Hoc Khiem Trieu (Technical University Hamburg-Harburg, DE)

19:30 - 22:30 Social Event

Thursday, October 9, 2014 • 16:30 - 18:00

Room: Bonatz Saal [in German] **Track P**

SFB 599: In vivo and Transfer

Chairs: Ingo Nolte (University of Veterinary Medicine Hannover, DE); Thomas Lenarz (Hannover Medical School, DE)

16:30 **Animal models for the analysis and evaluation of Tissue Engineering constructs**
Nils-Claudius Gellrich, Andreas Kampmann, Felicitas Miller, Simon Spalthoff, Philipp Jehn, Horst Kokemueller, Frank Tavassol (Hannover Medical School, DE)

16:45 **Suitable animal models for the examination of magnesium-based implant materials**
Janin Reifenrath (University of Veterinary Medicine Hannover, DE); Martin Durisin (Medical University of Hannover, DE); Tobias Schilling (Hannover Medical School, DE); Nina Angrisani (University of Veterinary Medicine Hannover, Foundation, DE)

17:00 **Notwendigkeit von Tierversuchen für die Implantat-Forschung**
Brigitte Vollmar (University of Rostock, DE)

17:15 **Wann brauchen wir Tierversuche im Zertifizierungs-verfahren für Implantate**
Hans Haindl (Sachverständigenbüro, DE)

17:30 **Different implants have different biofilm communities - lessons for implant optimization**
Wolf-Rainer Abraham (Helmholtz Zentrum für Infektionsforschung, DE)

17:45 **Influence of fluid composition on magnesium in vitro degradation**
Ana Tavares (Leibniz University Hannover - Institute for Multiphase Processes, DE), Florian Evertz, Sara Knigge (Leibniz University Hannover, DE); Muhammad Rahim (Helmholtz Centre for Infection Research, Braunschweig & Technical University of Braunschweig, DE); Peter P Mueller (Helmholtz Centre for Infection Research, DE); Hans Jürgen Maier, Birgit Glasmacher (Leibniz Universität Hannover, DE)

19:30 - 22:30 Social Event

Room: Blauer Saal **Track A**

FA: BioNanomaterialien

Chairs: Stephan Barcikowski (Laser Zentrum Hannover e.V., DE), Meike Stiesch (Hannover Medical School, DE)

16:30 **Implant debris model material - alloy nanoparticles and their toxicity**
Christoph Rehbock, Stephan Barcikowski (University of Duisburg-Essen, DE)

16:45 **Nanoporous Ceramics and Metals as Biomaterials**
Peter Behrens (Leibniz University Hannover, DE)

17:00 **BIOFABRICATION for NIFE - Development of Innovative Strategies for the Prevention and Control of Biofilm-Associated Implant Infections**
Sascha Nico Stumpp, Henryke Rath, Katharina Doll, Nadine Andric (Hannover Medical School, DE); Peter Behrens (Leibniz University Hannover, DE); Boris Chichkov (Laser Zentrum Hannover e.V., DE); Meike Stiesch (Hannover Medical School, DE)

19:30 - 22:30 Social Event

Thursday, October 9, 2014 • 16:30 - 18:00

Room: Roter Saal **[in German]** **Track P**

Why do FES-solutions reach market and patient, and others similarly important not?

Chairs: Winfried Mayr (Medical University of Vienna, AUT); Thomas Stieglitz (Albert-Ludwigs-Universität Freiburg & Institut für Mikrosystemtechnik, DE)

16:30 **Observations over many years between breaking up and head wind**
Winfried Mayr (Medical University of Vienna, AUT)

16:45 **Cochlear implants, an exemplary success story**
Thomas Lenarz (Hannover Medical School, DE)

17:00 **Lessons learned from market introduction of a fundamentally novel stimulaton device by a consultative and applying physician**
Peter Biowski (DR Schuhfried Medizintechnik GmbH, AUT)

17:15 **Orthesis or electrical stimulation - patient centred technical support options for neurorehabilitation**
Thorsten Boeing (Otto Bock HealthCare GmbH, DE)

17:30 **Neuroprostheses for rehabilitation of individuals with spinal cord injury - experiences from clinical applications of implantable and non-invasive solutions**
Ruediger Rupp (Heidelberg University Hospital, DE)

17:45 **Why do electrodes in clinical applications still look like in the 1960ies ?**
Thomas Stieglitz (Albert-Ludwigs-University Freiburg & Institut für Mikrosystemtechnik, DE)

18:00 **Concluding panel discussion**
Winfried Mayr (Medical University of Vienna, AUT)

19:30 - 22:30 Social Event

Room: Konferenz Raum 7+9 [in German] **Track L**

FS: Hygiene and Biomedical Engineering: Not just an issue for sterile application of medical products?

Chair: Clemens Bulitta (Ostbayerische Technische Hochschule (OTH), DE)

16:30 **Hygiene meets Medical Engineering: Challenges and Relevance for Infection Prevention**
Frank Wille (Hybeta GmbH, DE)

16:45 **Safe reprocessing of medical devices with a view of the entire process chain - the guideline VDI 5700**
Marc Kraft (Technical University Berlin, DE); Clemens Bulitta (Ostbayerische Technische Hochschule (OTH), DE)

17:00 **Methods and first results of assessment of micro-biologic burden of non sterile-used medical devices**
Sebastian Buhl (Ostbayerische Technische Hochschule Amberg-Weiden, DE)

17:15 **The Hybrid OR: Example for challenges and requirements of hygiene in medical engineering**
Benjamin Russwurm (Ostbayerische Technische Hochschule Amberg-Weiden, DE)

17:30 **Hygiene meets medical Engineering: The Industry's perspective**
Ernst Wilhelm Schubert (DrägerMedical GmbH, DE)

17:45 **Abschlussstatement**
Clemens Bulitta (Ostbayerische Technische Hochschule (OTH), DE)

19:30 - 22:30 Social Event

Thursday, October 9, 2014 • 16:30 - 18:00

Room: Konferenz Raum 8+10 **Track M**

Modelling and Simulation (3)

Chair: Daniel Baumgarten (Technische Universität Ilmenau, Germany)

16:30 Real-Time Single-Trial Source Localization using RAP-MUSIC and Region of Interest Clustering
Christoph Dinh (Ilmenau University of Technology & Jena University Hospital, DE),; Daniel Strohmeier, Lorenz Esch (Ilmenau University of Technology, DE); Daniel Güllmar (Jena University Hospital, DE); Daniel Baumgarten (Ilmenau University of Technology, DE); Matti S Hämäläinen (MGH Hospital, USA); Jens Haueisen (Technical University Ilmenau, DE)

16:45 **A prototype to generalize clinical cases of the glucose-insulin system**
Charbel El Gemayel (INSA de Lyon & Lebanese University, LIB); Fabrice Jumel (INSA de Lyon, FRA); Joseph Constantin (Lebanese University Faculty of Sciences II, LIB); Doumit Zaouk (Lebanese University, LIB); Nacer Abouchi (CPE Lyon, FRA)

17:00 **Estimating Relative Change in Ventricular Stroke Work from Aortic Pressure Alone: Proof of Concept Study**
Shun Kamoi (University of Canterbury, Department of Mechanical Engineering, NZL); Christopher Pretty, Yeong Shiong Chiew (University of Canterbury, NZL); Antoine Pironet, Thomas Desaive (University of Liege, BEL); Geoffrey Shaw (Christchurch Hospital, NZL); Geoff Chase (University of Canterbury, NZL)

17:15 **Analysis of blood glucose dynamics in liver trans-plantation: a model-based approach**
József Homlok (Budapest University of Technology and Economics, HUN); Geoff Chase (University of Canterbury, NZL); Tibor Doktor, Balázs Benyó (Budapest University of Technology and Economics, HUN)

17:30 **Development of a hybrid surgical training simulator for the replacement of the aortic valve facilitating porcine hearts**
Tobias Pilic (HTWK Leipzig & ISTT, DE)

17:45 **Enhanced Fluorescent Cell Simulation using Texture Mapping and Statistical Shape Model**
Veit Wiesmann (Fraunhofer IIS, DE); Daniela Franz (Fraunhofer IIS & University of Erlangen-Nueremberg, DE); Martin Prinzen, Thomas Wittenberg, Matthias Bergler (Fraunhofer IIS, DE); Ralf Palmisano (Optical Imaging Center Erlangen OICE, DE)

19:30 - 22:30 Social Event

Room: Konferenz Raum 11+13 **Track F**

Devices and Systems for Surgical Interventions (1)

Chair: Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE)

16:30 **Alarm-related Hazards In Patient Monitoring: An Analysis of Case Reports**
Kathrin Lange, Miriam Nowak, Wolfgang Lauer (Federal Institute for Drugs and Medical Devices (BfArM), DE)

16:45 **Evaluation of the influence of contact time and inflation pressure on drug transfer from drug-coated balloons**
Anne Seidlitz, Wiebke Kempin (Ernst-Moritz-Arndt-Universität Greifswald, DE); Thomas Reske, Sebastian Kaule, Niels Grabow, Svea Petersen (University of Rostock, DE); Claus Harder (Biotronik SE und Co. KG, DE); Stefan Nagel, Werner Weitschies (Ernst-Moritz-Arndt-University Greifswald, DE)

17:00 **The Influence of Storage Time and Degassing of Particle Solutions on Particle Counting Accuracy**
Christoph Brandt, Wolfram Schmidt, Andrea Böhme, Klaus-Peter Schmitz (University of Rostock, DE)

17:15 **Confocal laser microscopy in minimal invasive surgery**
David Ellebrecht, Maximilian Gebhard, Tobias Keck, Markus Kleemann (University Hospital Schleswig-Holstein-Campus Luebeck, DE)

17:30 **An approach to maxillofacial surgical planning transfer based on electromagnetic tracking**
Igor Nova, Sebastian Kallus, Christoph Auer, Urs Eisenmann, Moritz Berger, Robin Seeberger, Hartmut Dickhaus (University of Heidelberg, DE)

19:30 - 22:30 Social Event

Thursday, October 9, 2014 • 16:30 - 18:00

Room: Konferenz Raum 12+14 **[in German]** **Track Q**

BMT-Aus- und Weiterbildung (2)

Chairs: Ute Morgenstern (Technical University Dresden, DE); Ernst Hofer (Medical University of Graz, AUT)

16:30 **Practical Testing in Oral Exams**
Martin Baumann, Mazdak Karami, Andreas Ritter (RWTH Aachen University, DE)

16:40 **Educational Goals, Competencies, Performance - How to Describe the Learning Outcomes of Study Programmes in Biomedical Engineering?**
Maria Zellerhoff, Ralf Romeike (University Erlangen-Nürnberg, DE); Wolfgang Weber (Weber Wissenschaftliche Dienste, DE);

16:50 **The deployment of interactive presentation media in medical physics and biophysics: a novel approach to improve quality and dynamics of plenary lectures**
Ernst Hofer, Josef Haas (Medical University Graz, AUT)

17:00 **Demands on a continuing education online-study program for physicians**
Jasmin Seifried, Vera Titschen (University Medical Center Freiburg, DE); Josef Guttmann (University Hospital Freiburg, DE); Stefan Schumann (Division of Experimental Anesthesiology, Department of Anesthesiology and Intensive Care Medicine, DE)

17:10 **Criteria for Selection of Web-based Video Technologies**
Thomas Kupka (Hannover Medical School, DE); Michael Marschollek (Peter L. Reichertz Institut TU Braunschweig & MHH, DE); Gerald Stiller, Stefan Franz, Marianne Behrends (Hannover Medical School, DE)

17:20 **Kompetenzbasierter Lernzielkatalog für das Studium der Humanmedizin**
Hartmut Gehring (University of Luebeck & University Hospital Schleswig-Holstein, DE)

17:30 **Rundtischdiskussion zum Gegenstands- und Studiengangskatalog Biomedizinische Technik, Akkreditierungsempfehlungen, Gütesiegel für Studiengänge der BMT und BMT im Medizinstudium**
Marc Kraft (Technical University Berlin, DE); Martin Baumann (RWTH Aachen University, DE); Maria Zellerhoff (University Erlangen-Nürnberg, DE); Wolfgang Weber (Weber Wissenschaftliche Dienste, DE); Hartmut Gehring (University of Luebeck & University Hospital Schleswig-Holstein, DE); Ernst Hofer (Medical University of Graz, AUT); Ute Morgenstern (Technical University Dresden, DE)

19:30 - 22:30 Social Event

Room: Runder Saal

Poster Session Track P

Chairs: Steffen K Rosahl (HELIOS Kliniken & University of Freiburg, Germany, DE), Thomas Stieglitz (Albert-Ludwigs-Universität Freiburg & Institut für Mikrosystemtechnik, DE)

Room: Runder Saal 16:30 - 17:27 **Track P**

Poster Session: Prosthetics and Implants

P-P 01
16:30 **Reaction time to vibrotactile simulation in navigation task**
Jing Yu, Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE)

P-P 02
16:33 **Changes on a platinum electrode surface during acoustic stimulation of a cochlear implant - in vitro approach**
Martin Durisin, Thomas Lenarz, Natalie Kanaan (Medical University of Hannover, DE); Friedrich-Wilhelm Bach, Luigi Angrisani, Hans Jürgen Maier (Leibniz University Hannover, DE)

P-P 03
16:36 **Biomaterial Selection for Novel Low Weight Hip Implant Design**
Sudesh Sivarasu (University of Cape Town, SA); Pearline Beulah (VIT University, IND); Lazar Mathew T (PSG Institute of Advanced Studies, IND)

P-P 04
16:39 **3D Reconstruction of Knee Joint from CT Images and Customized Meniscus Development**
Sudesh Sivarasu (University of Cape Town, SA)

P-P 05
16:42 **Wear simulator study and finite element simulation of highly crosslinked liner under steep acetabular cup position**
Carmen Zietz, Daniel Kluess, Christian Fabry, Frank Feldhege, Wolfram Mittelmeier, Rainer Bader (University of Rostock, DE)

P-P 06
16:45 **Finite-Element-Analysis of a Six-Hole Tibia Shaft Locking Plate to Optimize the Screw Hole Position**
Lennart Wolter, Markus Eblenkamp, Miriam Haerst, Markus Schönberger, Erich Wintermantel (Technical University Munich, DE)

19:30 - 22:30 Social Event

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P-P 07
16:48 **Flow characteristic adjustment of micro-valves for glaucoma drainage devices - numerical and experimental studies**
Stefan Siewert, Wolfram Schmidt (University of Rostock, DE); Ulf Hinze, Boris Chichkov (Laser Zentrum Hannover e.V., DE); Rudolf Guthoff (University of Rostock & Universitätsaugenklinik Rostock, DE); Klaus-Peter Schmitz (University of Rostock, DE)

P-P 08
16:51 **Estimation of required travel distance of a linear drive for testing nitinol stents for peripheral vasculature in axial compression**
Lena Schmitt, Wolfram Schmidt, Udo Röhr, Klaus-Peter Schmitz (University of Rostock, DE)

P-P 09
16:54 **Overview of solutions for system integration subtasks of a mechatronic intraocular implant**
Liane Koker, Ulrich Gengenbach, Georg Bretthauer (Karlsruhe Institute of Technology, DE)

P-P 10
16:57 **Slot width dependent mechanical properties of a polymeric slotted tube coronary stent: numerical and experimental data**
Kerstin Schuemann, Heiner Martin, Udo Röhr, Klaus-Peter Schmitz, Niels Grabow (University of Rostock, DE)

P-P 11
17:00 **Comparison between electromagnetic and electrical stimulation on human osteoblasts in vitro**
Bettina Hiemer (University of Rostock & Biomechanics and Implant Technology Research Lab, DE); Josefin Ziebart, Anika Jonitz-Heincke (University of Rostock, DE); Yukun Su (University Medicine Rostock, DE); Juliane Pasold (University of Rostock, DE); Holger Lausch, Michael Brand (Fraunhofer-Institut für Keramische Technologien und Systeme IKTS, DE); Doris Hansmann, Rainer Bader (University of Rostock, DE)

P-P 12
17:03 **Establishment of biofilm dispersing methods for bacterial quantification**
Katrin Jongsthaphongpun, Sascha Nico Stumpp, Andreas Winkel, Jörg Eberhard, Meike Stiesch (Hannover Medical School, DE)

19:30 - 22:30 Social Event

P-P 13
17:06 **The influence of electrical stimulation on the initial attachment and biofilm formation of Streptococcus gordonii**
Henryke Rath, Nico Stumpp, Andreas Winkel, Sebastian Grade, Marly Dalton, Meike Stiesch (Hannover Medical School, DE)

P-P 14
17:09 **Silicone-alginate-composite for cell based therapies: a novel silicone based implant material for immobilization of drug releasing cells**
Katrin Bierkandt, Jaryi Lippek, Michael M. Gepp, Roman Ruff, Wigand Poppendieck, Heiko Zimmermann, Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE)

P-P 15
17:12 **Development of a multispecies biofilm model for future evaluation of biofilm-inhibitive properties of new implant surfaces**
Nadine Andric, Sascha Nico Stumpp (Hannover Medical School, DE); Mathias Müsken (Twincore, Center for Experimental and Clinical Infection Research, Hannover, DE); Andreas Winkel, Grade (Hannover Medical School, DE); Susanne Häußler (Twincore, Center for Experimental and Clinical Infection Research, Hannover, DE); Meike Stiesch (Hannover Medical School, DE)

P-P 16
17:15 **Cranial bone feedthrough for a multichannel ECoG electrode lead of a chronically implanted BCI - A design study**
Fabian Kohler (University of Freiburg & IMTEK, DE); Eva Singler (University of Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE); Martin Schuettler (University of Freiburg, DE)

P-P 17
17:18 **Slow, transient reduction of blood pressure using repetitive selective vagal nerve stimulation**
Dennis Plachta (Laboratory for Biomedical Microtechnology University of Freiburg - IMTEK, DE); Mortimer Gierthmuehlen (University Hospital Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE)

19:30 - 22:30 Social Event

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P-P 18
17:21 **Controlling a simple hand prosthesis using brain signals**
Mehrnaz Kh. Hazrati (University of Florida, USA); Rand Kasim Almajidy (University of Lübeck & College of Medicine, University of Diyala, Diyala, DE); Jeffrey Weiss (University of Pittsburgh, Pittsburgh, USA); Stephen Oung (Bionym Inc., CAN); Ulrich Hofmann (University Hospital Freiburg, DE)

P-P 19
17:24 **On the stability of implanted thin-film stimulation electrodes**
Paul Cvancara, Tim Boretius (University of Freiburg, DE); Pawel Maciejasz (AXONIC Neurostimulation Systems, France), David Guiraud (INRIA & LIRMM, France); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE)

P-P 20
11:49 **Comparative study of different translational methods for the development of medicinal products inside the research collaboration BIOFABRICATION for NIFE in Hannover**
Nico Lüdtke, Franziska Duda, Henning Voigt, Anneke Loos, Wilhelmi, Andreas Kampmann (Hannover Medical School, DE); Cornelius Schubert (University of Siegen, DE); Manfred Elff, Thomas Lenarz, Axel Haverich (Hannover Medical School, DE)

19:30 - 22:30 Social Event

Room: Niedersachsenhalle B

Keynote 5

08:30 **Stent technology - Innovations and developments**
Prof. Dr.-Ing. habil. Klaus-Peter Schmitz, University Rostock, Institute for Biomedical Engineering (IBMT)

Studied 1964-1969 Applied Mechanics at the University of Rostock. After that, he conducted his PhD work in a postgraduate study in the field of Structural Mechanics and finished it in 1972.
From 1972 to 1984 he worked as a development engineer in the shipbuilding industry at the Institute for Naval Architecture Rostock. He finished his habilitation treatise in 1980 in the field of theory of oscillations.
After that, he was appointed as the Head of the research department "Biomechanics and Medical materials" at the Clinic for Internal Medicine at the University of Rostock. Since 1992 he has a professorship for Biomedical Engineering. Since 1995 he is the Head of the Institute for Biomedical Engineering at the University of Rostock. His research field focusses on implants and biomaterials with special emphasis on cardiovascular implants.
Prof. Schmitz is a regular member of the Berlin-Brandenburg Academy of Science, Class of Technical Science. Moreover, he is a founder member of acatech, the German Academy of Technical Sciences.
From 1996 to 2004 he was active as an alternative consultant of the German Research Society DFG in the field of Medical Physics and Biomedical Engineering.
He was member of the Board of the special research department DFG Transregio-SFB 37 "Micro- and Nanosystems in Medicine – Reconstruction of Biological Functions" and assistant spokesman for the Rostock location. Apart from this, he is Chairman of the Board of the coordinated project "REMEDIS – Higher Quality of Life through Novel Micro Implants" within the BMBF program "Leading-edge Research and Innovation in the New German Länder".
Also, he is Chairman of the Board of the coordinated research project "RESPONSE – Partnership for Innovation in Implant Technology" within the BMBF program "Zwanzig20 – Partnership for Innovation".
His medline record features 93 publications since 2008. In the last 5 years he was a co-inventor of 10 issued patents.

09:00 - 09:15 Coffee break

Room: Niedersachsenhalle B **Track P**

FS: Intelligent Implants

Chairs: Alfred Stett (NMI Naturwissenschaftliches und Medizinisches Institut, DE); Thomas Stieglitz (Albert-Ludwigs-University Freiburg & Institut für Mikrosystemtechnik, DE)

09:15 **Development of a fully implantable EMG measurement system: Status report on the MyoPlant project**
Michael Russold, Sören Lewis (Otto Bock Healthcare Products GmbH, AUT); Lait Abu Saleh (Hamburg University of Technology, DE); Josep Cardona (IBMT, DE), Marie Hahn (Medical University of Vienna, AUT); Martina Schiestl (University Vienna, AUT); Roman Ruff (Fraunhofer Institut für Biomedizinische Technik, DE); Dietmar Schroeder (Hamburg University of Technology, DE); Bahareh Taghizadeh, Sina Plümer (German Primate Center, DE); Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE), Wolfgang Krautschneider (Hamburg University of Technology, DE); Alexander Gail (German Primate Center, DE); Thomas Meiners (Werner-Wicker-Klinik, DE); Hermann Lanmüller, Oskar Aszmann (Medical University Vienna, AUT); Hans Dietl (Otto Bock HealthCare GmbH, DE)

09:30 **System integration of a silicone-encapsulated glucose monitor implant**
Mario Birkholz, Paul Glogener, Thomas Basmer, Franziska Glös, Dieter Genschow (IHP-Leibniz-Institut für Innovative Mikroelektronik, DE); Christine Welsch, Roman Ruff, Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE)

09:45 **Implantable Electrochemical Biosensor Capsule**
Alfred Stett, Martina Cihova, Gorden Link, Rene P. von Metzen, Volker Bucher, Martin Stelzle (NMI Natural and Medical Sciences Institute at the University of Tuebingen, DE); Andreas Pojtinger, Katharina Schneider (2E Mechatronic GmbH & Co. KG, DE); Dieter Mintenbeck (Hahn Schickert Institut, DE); Daniel Rossbach (HSG-IMIT Institut für Mikro- und Informationstechnik, DE); Harald Richter, Moustafa Nawito (IMS Chips, DE); Karl-Heinz Boven, Andreas Moeller, Christoph Jeschke, Jens Paetzold (Multi Channel Systems GmbH, DE); Thorsten Goettsche, Oliver Bludau, Nora Haas, Dana Tompkins (OSYPKA AG, DE); Timo Lebold, Martin Kokelmann (Retina Implant AG, DE)

Continue Track F next page

10:45 - 11:15 Coffee break

Continue Track F

10:00 **The Brain-Interchange implant system for novel closed-loop therapies in the central nervous system**
Joern Rickert (CorTec GmbH, Freiburg & Bernstein-Center, University of Freiburg, DE); Jörg Fischer (Institute for Biology, University of Freiburg & CorTec GmbH, DE); Fabian Kohler (University of Freiburg & IMTEK, DE); Karl-Heinz Boven (Multi Channel Systems MCS GmbH, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE); Martin Schuettler (University of Freiburg, DE)

10:15 **The alfapump System, a new Device for managing Ascites**
Thomas Degen (Sequana Medical AG, CH)

10:30 **Implantable Sensor to Measure Liquor Pressure of a Ventricular Drainage System**
Michael Görtz, Gerd vom Bögel, Michael Kraft (Fraunhofer IMS, DE)

10:45 - 11:15 Coffee break

Room: Bonatz Saal [in German/English] **Track A**

SFB 599: Hörimplantate

Chairs: Peter Behrens (Leibniz University Hannover, DE), Peter P Mueller (Helmholtz Centre for Infection Research, DE)

09:15 **Coating of Polyimides for the Improvement of auditory implants**
Christoph Hadler (Technical University Braunschweig & Institut für Technische Chemie, DE); Kirsten Wissel (Hannover Medical School, DE); Wibke Dempwolf (Technical University Braunschweig, DE); Günter Reuter, Thomas Lenarz (Hannover Medical School); Henning Menzel (Technical University Braunschweig, DE)

09:30 **Micro- and Nano-patterned Cochlear Implant Electrode Arrays**
Gerrit Paasche (Hannover Medical School, DE); Elena Fadeeva (Laser Zentrum Hannover e.V., DE); Ines Linke (Hannover Medical School, DE); Boris Chichkov (Laser Zentrum Hannover e.V., DE) ; Thomas Lenarz (Hannover Medical School, DE)

09:45 **Development of an antibacterial silver-silica coating for a middle ear prosthesis**
Philipp Abendroth, Tanja Heemeier, Nina Ehlert, Mandy Jahns, Peter Behrens (Leibniz UniversityHannover, DE)

10:00 **Experimental study on the biocompatibility of middle ear prostheses with silver nanoparticle-containing silica coatings in rabbits**
Nils Prenzler, Franziska Duda, Gudrun Brandes, Susanne Bradel (Hannover Medical School, DE); Philipp Abendroth, Tanja Heemeier (Leibniz University Hannover, DE); Muhammad Rahim (Helmholtz Centre for Infection Research, Braunschweig & Technical University of Braunschweig, DE); Bushra Rais (Helmholtz Centre for Infection Research, RDIF, DE); Peter P Mueller (Helmholtz Centre for Infection Research, DE); Peter Behrens (Leibniz University Hannover, DE); Karl Heinz Esser (University of Veterinary Medicine Hannover, DE); Thomas Lenarz (Hannover Medical School, DE)

Continue Track A next page

10:45 - 11:15 Coffee break

Continue Track A

10:15 **Phagocytic activity of the epithelium in the middle ear - a comparative electron microscopical study in rabbits implanted with various silica-coated Bioverit® II-TORPs for 21 days**
Max Wullstein, Franziska Duda (Hannover Medical School, DE); Philipp Abendroth, Tanja Heemeier (Leibniz University Hannover, DE); Karl Heinz Esser (University of Veterinary Medicine Hannover, DE); Peter Behrens (Leibniz University Hannover, DE); Nils Prenzler, Thomas Lenarz, Gudrun Brandes (Medical School Hannover, DE)

10:30 **Simulation of an ossicular chain and middle ear implants with pad**
Silke Besdo, Laura Doniga-Crivat, Tanja Heemeier (Leibniz University Hannover, DE); Susanne Bradel, Gudrun Brandes, Nils Prenzler (Medical School Hannover, DE); Peter Behrens, Peter Wriggers (Leibniz University Hannover, DE)

10:45 - 11:15 Coffee break

Room: Blauer Saal **Track D**

FA: Biomaterialien mit Implantatbezug (2)

Chairs: Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE); Katrin Sternberg (Aesculap AG, DE)

09:15 **Biomaterialien für das vaskuläre Tissue Engineering**
Axel Haverich (Medizinische Hochschule Hannover, DE)

09:30 **Bioaktivierung und Morphologiekontrolle von Biomaterialien als komplementäre Trigger der Zellantwort**
Jürgen Groll (Universität Würzburg, DE)

09:45 **Ionische Flüssigkeiten und ihr Potential für medizinische Anwendungen**
Udo Kragl (Universität Rostock, DE)

10:00 **Polymere als Biomaterialien und Möglichkeiten zu deren Modifizierung mit dem Ziel der Steuerung der Zelle-Implantat Interaktion**
Svea Petersen (Universität Rostock, DE)

10:45 - 11:15 Coffee break

Room: Roter Saal **Track K**

FS: Patient centered information management: challenges for biomedical engineering and medical informatics

Chair: Petra Knaup (University Heidelberg, DE)

09:15 **Predicting falls in people with dementia using accelerometry - A one-year prospective multi-center field study**
Matthias Gietzelt (University Hospital Heidelberg, DE); Klaus-Hendrik Wolf (Technical University Braunschweig & Hannover Medical School, DE); Michael Marschollek (Peter L. Reichertz Institut TU Braunschweig & MHH, DE); Reinhold Haux (Technical University Braunschweig, DE)

09:30 **Event based communication Architecture Model for living quarters**
Sebastian Thiele, Anke Häber (Westsächsische Hochschule Zwickau, DE)

09:45 **Customer-enabled orchestration of complex services: A new paradigm even for health care?**
Alfred Winter, Rainer Alt (Leipzig University, DE); Jan Ehmke (Technical University Berlin, DE); Reinhold Haux, Dirk Mattfeld (Technical University Braunschweig, DE); Andreas Oberweis (Karlsruher Institut für Technologie, DE); Barbara Paech (University Heidelberg, DE)

10:00 **Using workflow based patient centric activity lists for monitoring patients in the ambulatory setting**
Matthias Schablowski-Trautmann (InterComponentWare AG, DE)

10:15 **Using AAL-data for healthcare decisions – necessity of systematic information management**
Petra Knaup (UniversityHeidelberg, DE); Hans Demski (Helmholtz Zentrum München, DE), Matthias Ganzinger (University of Heidelberg, DE); Axel Helmer (OFFIS e.V., DE); Sven Meister (Fraunhofer-Institut für Software- und Systemtechnik, DE); Matthias Schablowski-Trautmann (InterComponentWare AG, DE); Lothar Schoepe (Fraunhofer ISST, DE)

10:45 - 11:15 Coffee break

Friday, October 10, 2014 • 09:15 - 10:45

Room: Konferenz Raum 7+9 **Track D**

Cellular, Tissue and Bioengineering: Biomaterials for Regenerative Medicine

Chair: Stefan Jockenhoevel (RWTH Aachen & Helmholtz Institute for Biomedical Engineering, DE)

09:15 **Immunogenicity of intensively decellularized equine carotid arteries is conferred by the extracellular matrix protein collagen type VI**
Ulrike Böer, Falk Buettner, Melanie Klingenberg, Axel Haverich, Matthias Wilhelmi (Hannover Medical School, DE)

09:30 **Cell-age and cell type-dependent behavior of human vascular cells on micro-structured or soft polymer substrates**
Adria Sales Ramos, Fanlu Wang (Max Planck Institute for Intelligent Systems, DE); Hao Chen (Karlsruhe Institute of Technology (KIT), DE); Ralf Kemkemer (Max Planck Institute for Intelligent Systems and Reutlingen University, DE); Alexandra Greiner (Karlsruhe Institute of Technology (KIT), DE)

09:45 **(Micro-) Stereolithography based on Diode Laser Curing (DLC) and its Potential Applications in Tissue Engineering**
Mark Vehse, Clemens Lieberwirth, Hermann Seitz (University of Rostock, DE)

10:00 **LC-MS/MS-analysis of mice-cell derived extracellular matrices on plasma-polymerized plastic surfaces**
Rowena Duckstein (Fraunhofer IST & Technical University Braunschweig, DE); Kurt Dittmar, Manfred Nimtz, Werner Lindenmaier, Manfred Rhode (Helmholtz-Zentrum für Infektionsforschung, Braunschweig, DE); Kristina Lachmann, Michael Thomas (Fraunhofer-Institut für Schicht- und Oberflächentechnik IST, DE)

10:15 **Development of a Cryopreservation Procedure for a 3D Tissue Culture Model**
Felix Carl Wiegandt, Nicola Hofmann, Lothar Lauterboeck (Leibniz University Hannover & Institute for Multiphase Processes, DE); Birgit Glasmacher (Leibniz University Hannover, DE)

10:30 **Tissue engineering of three-dimensional spider silk constructs seeded with canine Olfactory Ensheathing Cells for application in spinal cord injury**
Desiree Schröder, Kerstin Reimers, Christina Allmeling (Medical School Hannover, DE); Nina Hambruch, Wolfgang Baumgärtner (University of Veterinary Medicine Hannover, DE); Peter Vogt, Christine Radtke (Hannover Medical School, DE)

10:45 - 11:15 Coffee break

Room: Konferenz Raum 8+10 **Track C**

Biosignal Processing (4): Cardio-vascular System A

Chairs: Niels Wessel (Humboldt University Berlin, DE); Thomas Penzel (Charité - Universitätsmedizin Berlin, DE)

09:15 **Periodic component analysis to eliminate ventricular far field artifacts in unipolar atrial electrograms of patients suffering from atrial flutter**
Tobias Oesterlein, Gustavo Lenis (Karlsruhe Institute of Technology (KIT), DE); Armin Luik, Claus Schmitt (Städtisches Klinikum Karlsruhe, DE); Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

09:30 **Morphologic Turbulence - A new algorithm for the analysis of morphologic features of the ECG**
Andrea Seeck (University of Applied Sciences Jena, DE); Karl Jürgen Bär (University Hospital, Jena, DE); Jens Haueisen (Technical University Ilmenau, DE); Andreas Voss (University of Applied Sciences Jena, DE)

09:45 **Detection and classification of atrial excitation patterns in intracardiac electrograms with application on biatrial basket catheter measurements**
Fabian Schenkel, Tobias Oesterlein (Karlsruher Institut für Technologie (KIT), DE); Armin Luik, Claus Schmitt (Städtisches Klinikum Karlsruhe, DE); Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

10:00 **QT interval extraction by two-dimensional signal warping**
Martin Schmidt (Technical University Dresden, DE); Mathias Baumert (The University of Adelaide, AUS); Hagen Malberg, Sebastian Zaunseder (Technical University Dresden, DE)

10:15 **Kalman-filter based sensor fusion for robust heart rate estimation from ambulatory ECG recordings during daily-life activities**
Timo Tigges, Reinhold Orglmeister (Technical University Berlin, DE)

10:30 **A vascular model with adjustable elasticity for pulse transit time measurements**
Sarah Schneider (Charité - Universitätsmedizin Berlin, DE); Grischa Gabel (Charité - Universitätsmedizin Berlin & Institute of Laboratory Medicine, Clinical Chemistry and Pathobiochemistry, DE); Klaus Affeld, Ulrich Kertzscher (Charité - Universitätsmedizin Berlin, DE)

10:45 - 11:15 Coffee break

Friday, October 10, 2014 • 09:15 - 10:45

Room: Konferenz Raum 11+13 **Track F**

Devices and Systems for Surgical Interventions (2)

Chairs: Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE)

09:15 **A speckle-reduced laser light source with passive PCM heat storage and optical system for integration in endoscopes**
Bastian Blase (Technical University Berlin, DE)

09:30 **Additive Manufacturing of Vascular Implants by Selective Laser Melting**
Yvonne Wessarges (University of Rostock & Laser Zentrum Hannover e. V., DE); Ronny Hagemann, Matthias Gieseke, Christian Nölke, Stefan Kaierle (Laser Zentrum Hannover e. V., DE); Wolfram Schmidt, Klaus-Peter Schmitz (University of Rostock, DE); Heinz Haferkamp (Institut für Werkstoffkunde, Leibniz Universität Hannover, DE)

09:45 **New diagnostics and therapy in the upper urinary tract**
David Wagner, Johann Wendler, Daniel Schindele, Markus Detert, Bertram Schmidt, Martin Schostak, Uwe-Bernd Liehr (Otto von Guericke University Magdeburg, DE)

10:00 **Ultrasound palpation as new method to measure articular cartilage thickness and stiffness in situ**
Martin Schöne (Charité - Universitätsmedizin Berlin, DE); Nils Männicke (Charité - Universitätsmedizin Berlin & Berlin-Brandenburg School for Regenerative Therapies, DE); Jukka Liukkonen, Juha Töyräs, Jukka Jurvelin (University of Eastern Finland, FIN); Kay Raum (Charité - Universitätsmedizin Berlin & Julius Wolff Institut & Berlin-Brandenburg School for Regenerative Therapies, DE)

10:15 **The Choice of Surgical Techniques for Dissecting Tissue. An Evaluation Software**
Anna Rasche (Technical University Berlin, DE); Simone Hanisch (Hochschule Furtwangen, DE); Stefan Eick, Olaf Hegemann (Aesculap AG & CO. KG, DE); Marc Kraft (Technial University Berlin, DE)

10:30 **Particle Path Segmentation: a fast, accurate, and robust method for localization of spherical markers in cone-beam CT projections**
Wissam El Hakimi, Johannes Beutel, Georgios Sakas (Interactive Graphics Systems Group (GRIS), Technical University Darmstadt, DE)

10:45 - 11:15 Coffee break

Room: Konferenz Raum 12+14 **Track M**

Wriggers Session (1)

Chair: Peter Wriggers (Leibniz University Hannover, DE)

09:15 **An integrated multi-scale computational approach for the biomechanics of bones**
Udo Nackenhorst (Leibniz University Hannover, DE)

09:30 **Simulation-assisted prosthetic design**
Ellankavi Ramasamy, Beate Dorow, Urs Schneider (Fraunhofer IPA, DE); Oliver Röhrle (Fraunhofer IPA & University of Stuttgart, Cluster of Excellence for Simulation Technology, DE)

09:45 **Computational Design of Ventricular Assist Devices with Focus on Numerical Hemolysis Estimation**
Lutz Pauli (RWTH Aachen University, DE); Jaewook Nam (Sungkyunkwan University, KOR), Matteo Pasquali (Rice University, USA); Marek Behr (RWTH Aachen University, DE)

10:00 **A large-scale patient-specific multi-physical finite element model of the heart**
Marc Hirschvogel, Lasse Jagschies, Stephen Wildhirt, Michael Gee (Technical University Munich, DE)

10:15 **Mechanical Stimulated Biochemical Fracture Healing within a Finite Element Framework**
Alexander Sapotnick, Udo Nackenhorst (Leibniz University Hannover, DE)

10:30 **Modeling Supra-Physiological Loading of Human Arterial Walls - Damage, Anisotropy and Component-Specific Behavior**
Thomas Schmidt (University of Duisburg-Essen, DE); Andreas J. Schriefl (Graz University of Technology, AUT); Daniel Balzani (Dresden University of Technology, DE); Gerhard A. Holzapfel (Graz University of Technology, AUT)

10:45 - 11:15 Coffee break

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Room: Runder Saal **Track H**

CURAC special session: Computer and robot assisted otologic surgery and implantations

Chair: Patrick Dubach (Innovation Center for Computer Assisted Surgery ICCAS University of Leipzig, DE)

09:15 **Otoendoscopic Visualization of Tympanoscopic Landmarks for Middle Ear Interventions and Robot Assisted Direct Cochlear Access**
Patrick Dubach (Innovation Center for Computer Assisted Surgery ICCAS University of Leipzig, DE); Marco-Domenico Caversaccio (Inselspital Bern, CH); Stefan Weber (University of Bern, CH); Gero Strauss (University Hosptal Leipzig, DE)

09:30 **Robot assisted direct Cochlear Access**
Stefan Weber (University of Bern, CH)

09:45 **Minimally invasive Cochlear Implant surgery**
Omid Majdani (Hannover Medical School, DE)

10:00 **Customized miniature stereotaxy-frame for skull base surgery**
Thomas S. Rau (Hannover Medical School, DE)

10:15 **Bildgebung, Segmentierung und Risikobewertung zur Planung implantierbarer Hörgeräte**
Mathias Hofer (University of Leipzig, DE); Daniela Franz (Fraunhofer IIS & University of Erlangen-Nueremberg, DE); Markus Pirlich (University of Leipzig, DE); Thomas Wittenberg (Fraunhofer Institute for Integrated Circuits IIS, DE); Marc Stamminger (University of Erlangen-Nuremberg, DE)

10:30 **Limits of high precision drilling within the temporal bone**
Stefan Hansen (Düsseldorf University Hospital, DE)

10:45 **Path planning and drilling in multi-port bone surgery of the lateral skull base**
Igor Stenin (Medizinische Hochschule Düsseldorf, DE)

10:45 - 11:15 Coffee break

Room: Niedersachsenhalle B [in German] **Track P**

Active and intelligent implants

Chairs: Ulrich Gengenbach (Karlsruhe Institute of Technology & Campus North, DE; Rene P. von Metzen (NMI Natural and Medical Sciences Institute at University of Tuebingen, DE);)

11:15 **Evaluation of comprehensive system integration concepts using different active optical elements for the Artificial Accommodation System**
Liane Koker (Karlsruhe Institute of Technology, DE); Ulrich Gengenbach (Karlsruhe Institute of Technology & Campus North, DE), Ingo Sieber (Karlsruhe Institute of Technology & Institute for Applied Computer Science, DE); Georg Bretthauer (Karlsruhe Institute of Technology, DE)

11:30 **Micro-Energy Battery Model for Runtime Optimization of Active Implants**
Markus Krug, Muris Pahl (Karlsruhe Institute of Technology, DE); Ulrich Gengenbach (Karlsruhe Institute of Technology & Campus North, DE); Georg Bretthauer (Karlsruhe Institute of Technology, DE)

11:45 **Implantable MEMS sensors and medical MEMS packaging issues for future implants**
Mario Baum, Marco Haubold, Maik Wiemer, Thomas Geßner (Fraunhofer-Institut für Elektronische Nanosysteme, DE)

12:00 **Development of an implantable integrated MEMS pressure sensor using polyimide epoxy composite and Atomic Layer Deposition for encapsulation**
Pierre Gembaczka, Michael Görtz (Fraunhofer IMS, DE); Michael Kraft (Fraunhofer IMS Duisburg, DE)

12:15 **A Flexible, Wireless Intracranial ECoG Recording System - Incrimp**
Rene P. von Metzen, Wilfried Nisch, Michael Weinmann, Volker Bucher (NMI Natural and Medical Sciences Institute at University of Tuebingen, DE); Alireza Gharabaghi, Saravanan Subramaniam (Eberhard Karls University Tuebingen, DE); Thilo Krüger (Inomed Medizintechnik GmbH, DE); Rainer Mohrlock, Karl-Heinz Boven (Multi Channel Systems MCS GmbH, DE); Alfred Stett (NMI Naturwissenschaftliches und Medizinisches Institut, DE)

12:30 **Lichtwellenleiter aus PDMS für biomedizinische Anwendungen**
Frank Rehberger, Eva Fiedler (University of Freiburg, DE); Thomas Stieglitz (University of Freiburg & Institut für Mikrosystemtechnik, DE), Hans Zappe, Andreas Seifert (University of Freiburg, DE), Fabian Kohler, Matthias Müller (University of Freiburg & IMTEK, DE

12:45 - 13:45 Lunch break

Room: Bonatz Saal **Track P**

SFB 599: Orthopädische Implantate

Chairs: Christina Stukenborg-Colsman, Christof Hurschler (Hannover Medical School, DE)

11:15 **Development and metal-forming of patient-individual acetabular components of titanium sheets**
Stefanie Betancur Escobar (Leibniz University Hannover & Institute for Metal Forming and Metal Forming Machine, DE); Anas Bouguecha, Amer Almohallami (Leibniz University Hannover, DE); Ingo Nolte (Tierärztliche Hochschule Hannover, DE); Christina Stukenborg-Colsman (Hannover Medical School, DE); Bernd-Arno Behrens (Leibniz University Hannover, DE)

11:30 **Numerical wear simulation of artificial hip joint: tribological behaviour of UHMWPE**
Amer Almohallami, Anas Bouguecha (Leibniz University Hannover, DE); Christina Stukenborg-Colsman, Matthias Lerch (Hannover Medical School, DE); Ingo Nolte (Tierärztliche Hochschule Hannover, DE); Bernd-Arno Behrens (Leibniz University Hannover, DE)

11:45 **Finite Element Simulation of periprosthetic bone remodelling after THA with a short and straight stem. How can it help the surgeon?**
Matthias Lerch (Hannover Medical School, DE)

12:00 **A nickel-titanium shape memory device for plate osteosynthesis of a tibia fracture model in sheep - preliminary results**
Sebastian Decker, Manuel Krämer, Anna-Katharina Marten (Hannover Medical School, DE); Ronny Pfeifer, Volker Wesling (Laser Zentrum Hannover e. V., DE); Christof Hurschler (Hannover Medical School & Laboratory for Biomechanics and Biomaterials, DE); Christian Krettek, Christian Müller (Hannover Medical School, DE)

12:15 **Effects of different coatings and proangiogenic factors using titanium-hybrid-implants**
Julia Matena (TiHo Hannover, DE); Matthias Gieseke (Laser Zentrum Hannover e.V., DE); Andreas Kampmann (Hannover Medical School, DE); Svea Petersen (University of Rostock, DE); Michael Teske (Universitätsmedizin Rostock, DE); Hugo Murua Escobar (University of Rostock, DE); Nils-Claudius Gellrich (Hannover Medical School, DE); Heinz Haferkamp (Institut für Werkstoffkunde, Leibniz Universität Hannover, DE); Ingo Nolte (Tierärztliche Hochschule Hannover, DE)

12:30 **Biodegradable, Drug Loaded Nanoparticles for Implant Coatings**
Nils Poth (Technical University Braunschweig, DE); Virginia Seiffart, Gerhard Gross (Helmholtz Zentrum für Infektionsforschung, DE); Henning Menzel, Wibke Dempwolf (Technical University Braunschweig, DE)

12:45 - 13:45 Lunch break

Room: Blauer Saal **Track A**

Biomaterials and Biocompatilibity (2)

Chair: Niels Grabow (University of Rostock, DE)

11:15 **Sputtered micropatterned Nitinol thick films**
Rodrigo Lima de Miranda (Christian-Albrechts-University Kiel & Acquandas GmbH, DE); Christoph Bechtold (Acquandas GmbH, DE); Christiane Zamponi (Christian-Albrechts-University Kiel, DE); Eckhard Quandt (CAU Kiel, DE)

11:30 **Influence of sodium fluoride on the BSA adsorption on titanium**
Fabian Kratz, Christine Müller, Neda Davoudi (University of Kaiserslautern, DE); Natalia Umanskaya, Simone Grass, Matthias Hannig (University Hospital of the Saarland, DE);Christiane Ziegler (University of Kaiserslautern, DE)

11:45 **Contact Angle Measurements on Dental Implants**
Herbert Jennissen (University Duisburg-Essen, DE); Steffen Lüers (Morphoplant GmbH, DE)

12:00 **Surface Functionalization of Silicone Rubber for Improved Cell Adhesion**
Cécile Boudot, Karl Freihart, Angelika Linder, Markus Eblenkamp, Miriam Haerst, Erich Wintermantel (Technical University Munich, DE)

12:15 **Material characterization of modified electrospun poly(L-lactide) nanofiber matrices for cardiovascular tissue engineering**
Daniela Arbeiter, Frank Luderer, Sarah Borowski, Klaus-Peter Schmitz,Niels Grabow (University of Rostock, DE)

12:30 **Operating point analysis of a Chandler-loop-system for dynamic in vitro hemocompatibility testing**
Niklas Peschke, Benjamin Krolitzki, Birgit Glasmacher (Leibniz University Hannover, DE)

12:45 - 13:45 Lunch break

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Room: Roter Saal **Track P**

Hearing for Tomorrow

Chairs: Peter Behrens (Leibniz University Hannover, DE); Volker Hohmann (Universität Oldenburg and Cluster of Exellence Hearing4all, DE)

11:15 **Path to construct synthetic synapses for enhanced electrode-nerve interaction in neuroprostheses**
Sedigheh Ebrahimpoor (Hannover Medical School, DE); Carsten Zeilinger (Leibniz University Hannover, DE); Theodor Doll, Thomas Lenarz, Pooyan Aliuos (Hannover Medical School, DE)

11:30 **Carbon Nanotubes as Coating-Material for Cochlear Electrodes**
Niklas Burblies (Leibniz University Hannover, DE); Katharina Kranz, Athanasia Warnecke (Hanover Medical School, DE); Hans-Christoph Schwarz, Peter Behrens (Leibniz University Hannover, DE)

11:45 **Nanoporous Platinum Coatings for the Advance of Electrode Surfaces**
Kim Dana Kreisköther, Nina Ehlert, Natalja Wendt, Hans-Christoph Schwarz (Leibniz University Hannover, DE); Athanasia Warnecke, Katharina Kranz (Hanover Medical School, DE); Peter Behrens (Leibniz University Hannover, DE)

12:00 **Evaluation of an ambisonics system for psycho-acoustical measurements in non-anechoic conditions**
Jan Heeren, Giso Grimm, Volker Hohmann (Universität Oldenburg and Cluster of Exellence Hearing4all, DE)

Room: Roter Saal

Acatech Study

12:15 **Innovationskraft der Gesundheitstechnologien - neue Empfehlungen zur Förderung innovativer Medizintechnik**
Olaf Doessel (Karlsruhe Institute of Technology (KIT), DE)

12:45 - 13:45 Lunch break

Room: Konferenz Raum 7+9 [in English] **Track J**

FS: Magnetic nanoparticles

Chairs: Jens Haueisen (Technical University Ilmenau, DE); Frank Ludwig (Technical University Braunschweig, DE)

11:15 **Protein corona formation around magnetic nanoparticles administered into a biological system**
Andreas Weidner (Technical University Ilmenau, DE), Joachim Clement, Ferdinand von Eggeling, Felix Schacher (Friedrich-Schiller-University Jena, DE); Silvio Dutz (Technical University Ilmenau, DE)

11:30 **Analysis of viscosity-dependent particle response in the context of Magnetic Particle Imaging**
Thilo Wawrzik, Christian Kuhlmann, Hilke Remmer, Meinhard Schilling, Frank Ludwig (Technical University Braunschweig, DE)

11:45 **Quantitative biomarker detection with magnetic nanoparticles**
Jan Dieckhoff, Hilke Remmer, Meinhard Schilling, Frank Ludwig (Technical University Braunschweig, DE)

12:00 **Analysis and quantification of aggregated nanoparticles by temperature dependent magnetorelaxometry**
Christian Knopke (Technical University Berlin & Physikalisch-Technische Bundesanstalt, DE); Frank Wiekhorst, Dietmar Eberbeck (Physikalisch-Technische Bundesanstalt, DE); Susanne Wagner (Charité - Universitätsmedizin Berlin, DE); Lutz Trahms (Physikalisch-Technische Bundesanstalt, DE)

12:15 **A rabbit sized phantom for validation of quantitative imaging of magnetic nanoparticle distributions**
Maik Liebl (Physikalisch-Technische Bundesanstalt, DE)

12:30 **Magnetorelaxometry imaging of magnetic nanoparticles with m-sequence based inhomogeneous excitation fields**
Daniel Baumgarten (Technical University Ilmenau, DE); Maik Liebl (Physikalisch-Technische Bundesanstalt, DE)

12:45 - 13:45 Lunch break

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Room: Konferenz Raum 8+10 **Track M**

Modelling and Simulation (4)

Chair: Knut Moeller (Furtwangen University & Institute of Technical Medicine (ITeM), DE)

11:15 **Direct optical spectral modulation with a Digital Micromirror Device (DMD) - Raytracing simulations of two input slit variants**
Benjamin Weber, Bodo Nestler (Luebeck University of Applied Sciences, DE); Hartmut Gehring (University of Luebeck & Universitätsklinikum Schleswig-Holstein, DE)

11:30 **The influence of measurement noise on parameter identification in a mathematical model of gas exchange**
Axel Riedlinger, Jörn Kretschmer,Knut Möller (Furtwangen University, DE)

11:45 **Simulation of laminar-to-turbulent transitional flow with application to Obstructive Sleep Apnea**
Christina Kluck, Thorsten M. Buzug (University of Luebeck, DE)

12:00 **ASL 5000 lung model fails to simulate preset mechanical parameters during HFJV and volume control ventilation with a decelerating flow waveform in some ventilators**
Monika Stranska (Czech Technical University in Prague, CZ); Karel Roubik (Czech Technical University in Prague & Faculty of Biomedical Engineering, CZ); Martin Rožánek (Czech Technical University in Prague, CZ)

12:15 **Using in-silico and real patient data to determine the influence of calibration on model prediction in a simple model of gas exchange**
Jörn Kretschmer, Axel Riedlinger, Knut Möller (Furtwangen University, DE)

12:30 **Evaluating selection criteria for physiological models of various complexities**
Achim Speck, Jörn Kretschmer, Axel Riedlinger, Knut Möller (Furtwangen University, DE)

12:45 - 13:45 Lunch break

Room: Konferenz Raum 11+13 **Track E**

FS: Assistance in pelvic surgery for nerve protection (pIONM)

Chairs: Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE); Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE)

11:15 **Anatomical considerations on pelvic intraoperative neuromonitoring**
Felix Aigner, Romed Hörmann (Innsbruck Medical University, AUT); Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE); Erich Brenner, Helga Fritsch (Innsbruck Medical University, AUT)

11:30 **Laparoscopic Pelvic Neuromonitoring Permits Superior Nerve-Sparing - Technical and electrophysiological aspects of the open and laparoscopic approach**
Daniel W. Kauff (University Medicine Johannes Gutenberg Mainz, DE); René Peter Bremm (Trier University of Applied Sciences, DE); Hauke Lang, Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE)

11:45 **Neural Stimulation and Signal Acquisition During Pelvic Intraoperative Neuromonitoring - A Technical Point of View**
Wigand Poppendieck (Fraunhofer Institute for Biomedical Engineering, DE); Karin H Somerlik-Fuchs (Albert-Ludwigs-University Freiburg, DE); Thilo Krüger (Inomed Medizintechnik GmbH, DE); Klaus Peter Koch (Trier University of Applied Sciences, DE); Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE)

12:00 **Algorithm for suppression of artefacts on the evoked EMG signal of internal anal sphincter**
Klaus Peter Koch, René Peter Bremm (Trier University of Applied Sciences, DE); Daniel W. Kauff, Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE)

12:15 **Pelvic Intraoperative Neurophysiologic Monitoring - Development and Realization as Medical Device**
Thilo Krüger (Inomed Medizintechnik GmbH, DE); Karin H. Somerlik-Fuchs (Albert-Ludwigs-University Freiburg, DE), Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE); Rudi Mattmüller (inomed Medizintechnik GmbH Teningen, DE)

12:30 **Sacral Neuromodulation - Evolution of Techniques, Procedures and Outlook into the Future**
Stefan Engelberg (Medtronic GmbH, DE); Daniel W. Kauff (University Medicine Johannes Gutenberg Mainz, DE); Klaus-Peter Hoffmann (Fraunhofer Institute for Biomedical Engineering & IBMT, DE); Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE

12:45 - 13:45 Lunch break

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Room: Konferenz Raum 12+14 **Track M**

Wriggers Session (2)

Chair: Peter Wriggers (Leibniz University Hannover, DE)

11:15 **Function and Perfusion Simulation of the Liver – A 3D physiological multi-scale model**
Tim Ricken (Technical University Dortmund, DE)

11:30 **Predictive quantification of the patient-specific cardiac function via biophysical numerical simulations**
Wolfgang Wall, Andreas Nagler, Julia Hörmann, Martin Pfaller, Cristobal Bertoglio (Technical University Munich, DE)

11:45 **Numerical simulation of patient-specific implants**
Stefan Diebels, Michael Roland (Universität des Saarlandes, DE); Tim Dahmen (DFKI, DE); Thorsten Tjardes, Robin Otchwemah, Bertil Bouillon (Kliniken der Stadt Köln, DE); Philipp Slusallek (DFKI, DE)

12:45 - 13:45 Lunch break

Room: Runder Saal **Track G**

FS: AAL in Professional and Academic Education – Offers and Potential

Chairs: Birgit Glasmacher (Leibniz University Hannover, DE); Jörn Krückeberg (Hannover Medical School, DE)

11:15 **A Certified Qualification Course for AAL Consultants for Health Professionals and Services, Craftsmen and Technicians - Design, Results and Perspectives**
Marianne Behrends (Hannover Medical School, DE); Michel Nitschke (Hannover University of Applied Sciences and Arts, DE); Thomas Kupka, Kristin Illiger (Hannover Medical School, DE); Michael Marschollek (Peter L. Reichertz Institut TU Braunschweig und MHH, DE); Jörn Krückeberg (Hannover Medical School, DE)

11:30 **Design and evaluation of a further education for persons working in AAL context**
Melanie Heussner, Birte Loeffler, Ludger Schmidt (University of Kassel, DE)

11:45 **AAL in the curriculum of health technology degree program**
Kurt Becker, Elmar Erkens (Ap Hochschule Bremen, DE)

12:00 **Coordination of AAL-Activities – a socio-technical Challenge**
Thomas Herrmann (University of Bochum, DE)

12:45 - 13:45 Lunch break

Room: Niedersachsenhalle B

Keynote 6

13:45 **Medical Information Privacy in the Light of Big Data**
Dr. Thilo Weichert, Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein (ULD), Kiel

Dr. jur. Thilo Weichert is since 2004 Privacy Commissioner of Schleswig-Holstein (Head of Independent Centre for Privacy Protection Schleswig-Holstein, Unabhängiges Landeszentrum für Datenschutz – ULD, www.datenschutzzentrum.de), Kiel, Germany, born 1955, studies in law and political science in Freiburg/ Germany and Geneva/Switzerland, 1984 lawyer, 1984-1986 member of the Parliament of Baden-Württemberg, 1988-2004 chairman of the Deutsche Vereinigung für Datenschutz e.V. (German Association for Privacy Protection), 1991 legal adviser of the Parliament of Sachsen (Saxony) and of the Committees for the Dissolution of the State Security Service of the GDR, 1992 member of the staff of the Privacy Commissioner of Niedersachsen (Lower Saxony), 1998-2004 Deputy Privacy Commissioner of Schleswig-Holstein.

14:15 - 14:30 Coffee break

Room: Niedersachsenhalle B **Track Q**

Junges Forum trifft Alte Hasen – "Die Entwicklung der Hochfrequenzablation – Rückblick und Perspektiven"

Chairs: Bruno Ismer (Offenburg University of Applied Sciences, DE), Karsten Seidl (Robert Bosch GmbH, DE)

14:30 **History and Perspective of Radiofrequency Catheter Ablation**
Bruno Ismer (Offenburg University of Applied Sciences, DE)

14:45 **Equipment for RF Ablation - A Challenge for Biomedical Engineering Students**
Tobias Haber, Bruno Ismer (Offenburg University of Applied Sciences, DE)

15:00 **RF Ablation Catheter Tip Material versus Lesion Geometry - The Value of Gold**
Fabian Holzer (Offenburg University of Applied Sciences, DE); Michael Braun (Osypka AG, Rheinfelden-Herten, DE); Bruno Ismer, Stephanie Altmann (Offenburg University of Applied Sciences, DE)

15:15 **Non-fluoroscopic Imaging with MRT/CT Image Integration - Catheter Positioning with Double Precision**
Susanne Kirchner (Offenburg University of Applied Scienes, DE); Hans-Peter Nuedling (Stockert GmbH Freiburg, DE); Bruno Ismer (Offenburg University of Applied Sciences, DE)

15:30 **General discussion**

16:00 - 16:30 Closing and Award Ceremony

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Room: Bonatz Saal **Track P**

SFB 599: Dentale Implantate

Chairs: Meike Stiesch (Hannover Medical School, DE); Henning Menzel (Technical University Braunschweig, DE)

14:30 **New nanofillers and antibacterial concepts for dental composites**
Nico Timpe (Technical University Braunschweig, DE); Hendrik Fullriede (Leibniz University Hannover, DE); Lothar Borchers, Meike Stiesch (Hannover Medical School, DE); Peter Behrens (Leibniz University Hannover, DE); Henning Menzel (Technical University Braunschweig, DE)

14:45 **Transparent PVD-coatings on zirconia for dental applications**
Christoph Hübsch (Leibniz University Hannover, DE); Lothar Borchers (Hannover Medical School, DE); Thomas Hassel (Leibniz University Hannover, DE); Meike Stiesch (Hannover Medical School DE)

15:00 **Infected dental implants of incisors and molars show different microbial communities**
Wolf-Rainer Abraham (Helmholtz Zentrum für Infektionsforschung, DE); Simone Schaumann, Meike Stiesch (Hannover Medical School, DE)

15:15 **Bacterial biofilms in dental implantology - in vitro and in vivo models to evaluate novel implant surfaces**
Andreas Winkel (Hannover Medical School, DE); Henning Menzel (Technical University Braunschweig, DE); Meike Stiesch, Sascha Nico Stumpp, Jörg Eberhard, Jingqing Sun (Hannover Medical School, DE)

15:30 **Evaluation of Implants in mouse models**
Hansjörg Hauser (Helmholtz Centre for Infection Research, DE)

15:45 **Grinding of New Zirconia-based Materials for Medical Applications with Electroplated Diamond Tools**
Andi Wippermann (Leibniz University Hannover, DE); Lukas Gottwik, Meinhard Kuntz (CeramTec GmbH, DE); Thilo Grove, Berend Denkena (Leibniz University Hannover, DE)

16:00 - 16:30 Closing and Award Ceremony

Room: Blauer Saal **Track O**

Prevention and Rehabilitation Engineering

Chair: Marc Kraft (Technical University Berlin, DE)

14:30 **Automatic detection of detrusor contraction – Signal analysis of manometric data from pelvic neuromonitoring in minimal invasive surgery**
Celine Wegner (Inomed Medizintechnik GmbH, DE); Karin H. Somerlik-Fuchs (Albert-Ludwigs-University Freiburg, DE); Thilo Krüger, Rudi Mattmüller (Inomed Medizintechnik GmbH Teningen, DE); Bernhard Vondenbusch (Furtwangen University, DE); Werner Kneist (University Medicine Johannes Gutenberg Mainz, DE)

14:45 **End-Effector-Based Robot Assisted Rehabilitation for Upper Extremities**
Braulio Duarte (RWTH Aachen University, DE)

15:00 **Velocity Vector Field Control of the Omnidirectional Rehabilitation Robot Reha-Maus**
Sven Knuth, Thomas Schauer (Technical University Berlin, DE)

15:15 **A Versatile Stimulator for Advanced Transcutaneous FES Applications Enabling User-Specified Pulse Waveforms**
Markus Valtin (Technical University Berlin, DE); Kristian Kociemba, Carsten Behling, Bjoern Kuberski, Matthias Weber (Hasomed GmbH, DE); Thomas Schauer (Technical University Berlin, DE)

15:30 **Use of an Inter-Phase Pause to Increase the Efficiency of Biphasic Pulses on Transcutaneous Electrical Stimulation**
José Luis Vargas Luna (Tecnológico de Monterrey & Medical University of Vienna, Mexico); Matthias Krenn (Medical University of Vienna, AUT), Jorge Cortés Ramírez (Tecnológico de Monterrey, Mexico); Winfried Mayr (Medical University of Vienna, AUT)

15:45 **Optimization of prosthetic alignments with a mobile gait analysis system**
Julius Thiele, Bettina Westebbe, Marc Kraft (Technical University Berlin, DE)

16:00 - 16:30 Closing and Award Ceremony

Friday, October 10, 2014 • 14:30 - 16:00

Room: Roter Saal **Track L**

Hearing4All – Auditorische Hörsysteme

Chair: Birger Kollmeier (Medizinische Physik, University Oldenburg, DE)

14:30 **Cocktail parties and binaural hearing aids: How Hearing technology gets us connected**
Birger Kollmeier (Medizinische Physik, University Oldenburg, DE)

15:00 **Investigation of laser-tissue-interaction for optical cochlea stimulation**
Nicole Kallweit (Laser Zentrum Hannover e.V., DE); Hannes Maier (Medical University of Hannover, DE); Michael Schultz (Medical University of Hannover & Laser Zentrum Hannover, DE); Nadine Tinne, Alexander Krüger (Laser Zentrum Hannover e.V., DE); Andrej Kral (Medical University of Hannover, DE); Tammo Ripken (Laser Zentrum Hannover e.V., DE)

15:15 **Monaural speech enhancement based on periodicity analysis**
Zhangli Chen (University of Oldenburg, DE); Volker Hohmann (University of Oldenburg and Cluster of Exellence Hearing4all, DE)

15:30 **Towards personalised noise reduction and directional processing in hearing aids**
Tobias Neher (University of Oldenburg, DE)

16:00 - 16:30 Closing and Award Ceremony

Room: Konferenz Raum 7+9 **Track L**

FS: LUMEN – Luebeck Medical Engineering. A joint research project for innovative methods in measuring and modelling vascular parameters for diagnostics and therapy

Chairs: Thorsten M. Buzug (University of Luebeck, DE); Stephan Klein (Luebeck University of Applied Sciences, DE)

14:30 **Investigation of particle dynamics near the endothelial glycocalyx by multi focus FCS**
Lars Kreutzburg, Vit Dolezal, Christian Hübner (University Luebeck, DE)

14:45 **Speckle-based holographic detection for non-contact Photoacoustic Tomography**
Christian Buj, Jens Horstmann, Michael Münter (University of Luebeck, DE); Ralf Brinkmann (Medical Laser Centre Luebeck, DE)

15:00 **Insight in Scanner Construction for a Dynamical Field Free Line for Magnetic Particle Imaging**
Matthias Weber, Klaas Bente, Thorsten M. Buzug (University of Luebeck, DE)

15:15 **The oxygen content of the cerebral efferent vessels - First steps to a sensor design**
Klaas Rackebrandt (University of Luebeck, DE) and Hartmut Gehring (University of Luebeck & University Hospital Schleswig-Holstein, DE)

15:30 **An approach for patient specific modeling of the aortic valve**
Jannis Hagenah (University of Luebeck, DE); Michael Scharfschwerdt (University Hosptal Schleswig-Holstein, DE); Christoph Metzner, Alexander Schlaefer (University of Lübeck, DE); Hans-Hinrich Sievers (Universiy Hospital Schleswig-Holstein, DE); Achim Schweikard (University of Luebeck, DE)

15:45 **Experimental Evaluation & Optimization of a UWB Localization System for Medical Applications**
Christian Bollmeyer (Luebeck University of Applied Sciences & Graduate School for Computing in Medicine and Life Sciences, DE); Horst Hellbrück (University of Applied Sciences Luebeck & CoSA Center of Excellence, DE); Hartmut Gehring (University of Luebeck & University Hospital Schleswig-Holstein, DE)

16:00 - 16:30 Closing and Award Ceremony

Friday, October 10, 2014 • 14:30 - 16:00

Room: Konferenz Raum 8+10 **Track B**

Biosensors and Bioanalytics

Chair: Gerald Urban (University of Freiburg, DE)

14:30 **Magneto-Hydrodynamic Focusing – A Novel Method for Highly Sensitive Biomolecule Detection**
Christian Reis (Fraunhofer IPA, DE); Caroline Siegert (Fraunhofer Institute for Manufacturing Engineering and Automation, DE); Nikolas Dimitriadis (Fraunhofer IPA, DE)

14:45 **Spatially resolved pH measurement using iridium oxide coated micro electrode arrays**
Stefan Lueck, Wilfried Mokwa, Tim Schroeder (RWTH-Aachen University, DE)

15:00 **A new technique for standardized assessment of the hypercapnic ventilatory response in mice**
Michael Scholtes (Technische Hochschule Mittelhessen- University of Applied Sciences, DE), Florian Lamm (ThoraTech GmbH, DE), Ljudmila Mursina (Technische Hochschule Mittelhessen – University of Applied Sciences & Competence Centre for Information Technology, DE), Damiano Librizzi, Bernd Müller, Ulrich Koehler (Philipps-University Marburg, DE), Volker Gross, Keywan Sohrabi (Technische Hochschule Mittelhessen – University of Applied Sciences, DE)

15:15 **A system to measure, control and regulate customized physiological environment parameters on small animal models**
Florian Lamm (ThoraTech GmbH, DE); Michael Scholtes (Technische Hochschule Mittelhessen-University of Applied Sciences, DE), Ljudmila Mursina (Technische Hochschule Mittelhessen – University of Applied Sciences & Competence Centre for Information Technology, DE); Andreas Weissflog (ThoraTech GmbH, DE); Volker Gross, Keywan Sohrabi (Technische Hochschule Mittelhessen – University of Applied Sciences, DE)

16:00 - 16:30 Closing and Award Ceremony

Room: Konferenz Raum 11+13 **Track L**

FS: Contactless measurement of biosignals: opportunities and limitations

Chairs: Stephan Heuer (FZI Forschungszentrum Informatik, DE), Tobias Wartzek (RWTH Aachen University, DE)

14:30 **Indicating artificial maternal and fetal pulse waves by capacitive sensing in a phantom**
Daniel Laqua (Ilmenau University of Technology & Institute for Biomedical Engineering and Informatics, DE); Stefan Pollnow, Jan Fischer, Sebastian Ley, Peter Husar (Ilmenau University of Technology, DE)

14:45 **Detection of movement, gait and bio-signals for e-Health and Home Care**
Robert Prance, Mohsen Fatoorechi, Helen Prance (University of Sussex, UK)

15:00 **Using an injection signal to reduce the effect of DC voltages and capacitance changes in capacitive biopotential measurements**
Aline Serteyn, Rik Vullings (Eindhoven University of Technology, NL); Mohammed Meftah (Philips Research, NL); Jan Bergmans (Technical University Eindhoven, NL)

15:15 **Towards camera based extraction of physiological signals for automotive applications**
Timon Blöcher (FZI Forschungszentrum Informatik & KIT Karlsruhe Institute of Technology, DE); Stephan Heuer (FZI Forschungszentrum Informatik, DE); Johannes Schneider, Wilhelm Stork (Karlsruhe Institute of Technology, DE)

15:30 **Capacitive ECG in the clinical context**
Martin Oehler (Capical GmbH, DE)

15:45 **Active humidification for capacitive-resistive ECG-systems**
Lennart Leicht, Benjamin Eilebrecht, Sören Weyer, Tobias Wartzek, Steffen Leonhardt (RWTH Aachen, DE)

16:00 - 16:30 Closing and Award Ceremony

Friday, October 10, 2014 • 14:30 - 16:00

Room: Konferenz Raum 12+14 **Track C**

FS: Methods for Multimodal Analysis of Brain Data

Chairs: Galina Ivanova (Ilmenau University of Technology, DE); Thomas Schanze (Technische Hochschule Mittelhessen - University of Apllied Sciences, DE)

14:30 **Reconstructing connectivity of oscillator networks from multimodal observations**
Arkady Pikovsky, Michael Rosenblum (Potsdam University, DE); Bjoern Kralemann (University of Kiel, DE)

14:45 **Towards the structural connectome: Tractography based parcellation and connectivity mapping**
Alfred Anwander (Max Planck Institute for Human Cognitive and Brain Sciences, DE)

15:00 **A Combined fMRI/fNIRS Approach: Improving Functional Specificity and Sensitivity by use of Mutual Information**
Evgeniya Kirilina (Free University Berlin, DE)

15:15 **A realistic neural mass model of the cortex with laminar-specific connections and synaptic plasticity**
Thomas Knösche, Peng Wang (Max-Planck-Institute for Human Cognitive and Brain Sciences, DE)

15:30 **Cortico-muscular coherence: optimization, phase and amplitude interactions, clinical perspective**
Vadim Nikulin (Neurophysics Group, Department of Neurology, Charité - University Medicine Berlin, DE)

15:45 **Exploration of Cognitive Processes using Multimodal Data Analyses**
Galina Ivanova, Handel, Clemens Seibold, Helen Perkunder, Max Schreiber, Daniel Miehe (Humboldt-University Berlin, DE)

16:00 - 16:30 Closing and Award Ceremony

Room: Runder Saal [in German] **Track K**

Medical Information Systems, Telemedicine, eHealth

Chair: Martin Braecklein (DGBMT Fachausschuss Mobile Diagnose- und Therapiesysteme - mHealth; Linde Healthcare, DE)

14:30 **Personal Diabetes Management Tools based on hybrid Neural Nets**
Matthias Reuter (Technical University of Clausthal, DE)

14:45 **Professional Use of Mobile Devices at a University Medical Center**
Kristin Illiger, Ute von Jan, Urs-Vito Albrecht (Hannover Medical School, DE)

15:00 **Creating gesture controlled games for robot-assisted stroke rehabilitation**
Franziska Schaetzlein, Ellinor Johansson, Peter Klein (User Interface Design GmbH, DE); Angelo Basteris (University of Hertfordshire, UK); Arno Stienen (Northwestern University, USA); Sharon Nijenhuis (Roessingh Research and Development, NL); Nasrin Nasr (University of Sheffield, UK); Patrizio Sale (IRCCS San Raffaele, ITA)

15:15 **Determining Reaction Times Using Touch Screen Devices - A Comparison of Various Methods**
Ute von Jan, Joerg Teske, Urs-Vito Albrecht (Hannover Medical School, DE)

15:30 **Standardization of ENT Oncological Anamnesis and Evaluation using Levenshtein Distance Measure**
Jens Meier (University of Leipzig, DE); Andreas Boehm (University Hospital Leipzig, DE); Thomas Neumuth (University of Leipzig, DE)

15:45 **Ultrasound communication for intelligent implants**
Daniel Laqua, Thomas Sühn (Ilmenau University of Technology & Institute of Biomedical Engineering and Informatics, DE), Karina Kring (Ilmenau University of Technology & Institute for Biomedical Engineering, DE), Kevin Albrecht, Peter Husar (Ilmenau University of Technology, DE)

16:00 - 16:30

Room: Niedersachsenhalle B

Closing and Award Ceremony

Chair: Thomas Lenarz (Hannover Medical School, DE)

Cochlear

Cochlear Deutschland GmbH & Co. KG

As the leading global expert in implantable hearing solutions, Cochlear is dedicated to bringing the gift of sound to people all over the world. For 30 years, Cochlear has pioneered this technology, helping more than a quarter of a million people reconnect to their families and friends.

Along with the industry's largest investment in research and development, we continue to partner with leading international researchers and hearing professionals, ensuring that we are at the forefront of hearing science.

For our customers, that means access to our latest technologies throughout their lives, and the ongoing support they need.

That is why Cochlear is the world's most chosen hearing partner for implantable hearing solutions.

Booth 12 ▸ www.cochlear.com

Fraunhofer ICT – IMM

Fraunhofer ICT-IMM

Fraunhofer ICT-IMM undertakes applied research in various areas of biomedical technology, neural recording and stimulation. Besides the development of customer specific, multisite microelectrode arrays and probes we also develop optical sensors and detection systems for medical applications such as continuous glucose monitoring.

Another focus is the customer specific development of point-of-care solutions for molecular diagnostics, immunoassays and cellomics. Our microtechnology based systems allow detection of biological species, their building blocks or metabolites. A new research field is the plasma-assisted surface modification for e.g. medical implants.

Booth 03 ▸ www.imm.fraunhofer.de/en.html

Gesellschaft für Silizium-Mikrosysteme mbH (GESIM mbH)

Building upon a broad expertise in made-to-order micromachining technologies and lab automation since 1995, GESIM has evolved into a highly innovative bioinstrumentation company offering five instrument platforms for piezoelectric microdispensing/microarraying ("NanoPlotter"), liquid handling and chemical synthesis ("BioSynthesizer"), 3D bioscaffold printing ("BioScaffolder"), microfluidics ("MicCell"), and automated microcontact printing ("µContactPrinter").

Being a small enterprise, GESIM is committed to quick decision making and working in close collaboration with universities, research institutes, and industry all over the world and also being a partner in numerous research projects.

Booth 10 ▸ www.gesim.de

LLS ROWIAK LaserLabSolutions GmbH

LLS ROWIAK LaserLabSolutions GmbH offers high quality laser instruments for imaging, and tissue and material processing, and cell manipulation. Beyond, it provides high quality services in tissue and material sample preparation, and is your expert partner for laser application research in Life and Material Sciences. Its basic technology is three dimensional, non-contact cutting, which was first realized by the laser microtome TissueSurgeon, a multipurpose sectioning device, which cuts tissue or other material by femtosecond lasers instead of steel blades. Adapted to a microscope and enhanced with spatial resolution, with the CellSurgeon the world of nano cutting to manipulate single cells or cell organelles was entered. All sectioning and manipulation can be guided and controlled by Optical Coherence Tomography or Multi Photon Microscopy.

Booth 07 ▸ www.lls-rowiak.de

Medlab GmbH

Medlab is a German manufacturer of high-quality modules used in professional patient monitoring products. Having been active in the market for more than twenty years, we also support our customers during integration and registration of the final procduct. We offer all patient-side modules that are needed to develop and build a professional patient monitor. This includes different EKG variants, pulse-oximetry modules, systems for invasive- and non-invasive blood pressure measurement, body temperature- and capnography modules. All components comply to the respective safety standards of the 60601 family. As we also regularely update our modules to stay in compliance to the newest revisions, efforts to keep products on the market are largely reduced on the customer side. Hard- and software are fully developed in-house. Therefore, it is possible to adapt them to customer specific requirements.

Booth 01 ▸ www.oem.medlab.eu

MHH Hannover Medical School

The Hannover Medical School, founded in 1965, is one of the world's leading university medical centres. Our research and patient care set national and international standards. We are also part of an excellent regional medical network. Our outstanding success in interdisciplinary collaboration both within the MHH and with extramural scientific institutions is reflected in the fact that the MHH is the German medical university with the greatest volume of grant funding.

The Department of Otorhinolaryngology at the Medical University of Hannover (MHH) is internationally renowned for hosting the world's largest cochlear implant (CI) programme to treat severely hearing impaired patients. To date, more than 7,000 people have received a CI here. Other priority areas include hearing-aid fitting (and improving this process), the early identification of hearing loss in children, diagnosis and treatment of inner-ear diseases including tinnitus, skull base surgery including treatment

of acoustic neuroma, tumour surgery using modern laser surgical and endoscopic techniques, diseases of the nose and sinuses, covering allergology, environmental medicine and plastic/reconstructive techniques.

Booth 09 ▸ www.mh-hannover.de/hno.html

MR:comp GmbH

MR:comp GmbH is providing the widest range of comprehensive MRI safety and compatibility testing services for implants & devices and has over 10 years of experience in magnetic resonance testing acc. to ISO 17025. Standard test methods are used acc. to ASTM, IEC, ISO/TS.We provide numerical simulation of electromagnetic fields analyzing MR characteristics & RF-induced heating of implants & instruments. Offering MR:comp's seminars in USA and Europe for several occupational groups concerning MR Safety and Compatibility as well. www.MagResource.eu MRI safety online database distributor for the EU with over 8000 implants & features. - Get your free trial today! The central platform www.MRI-Tec.com provides all high quality MR accessories & equipment to you.

Booth 08 ▸ www.mrcomp.com

Niedersächsisches Ministerium für Wirtschaft

Booth 04

BioRegioN Netzwerkinitiative Life Sciences – Niedersachsen

BioRegioN is the network initiative for life sciences in Lower Saxony. We connect partners from the worlds of business, science and politics with the main goal to bring the tremendous potential for excellent research results effectively to the market.

Our activities focus on supporting and advising regional companies, universities and research institutions in the fields of biotechnology, regenerative medicine and biomedical technology. We provide up-to-date information on trends and developments in the life sciences sector, as well as on funding and cooperation opportunities for our network partners. We also initiate innovative research and development projects at EU-, federal- and state level.

▸ www.bioregion.de

Capical GmbH

Capical was founded in 2010 by Dr. Martin Oehler, Henning Böge and Prof. Dr. Meinhard Schilling to provide an easier, faster and more significant ECG-Diagnosis by the use of capacitive electrodes. In 2013 the c • one, the first capacitive ECG-Device worldwide, was launched in the German market. Additionally, Capical develops solutions for the cardiac monitoring in medical and non-medical applications based on the capacitive electrode technology.

▸ www.capical.de

CINOGY GmbH

CINOGY GmbH specialises on the development and production of innovative, plasma-based processes and products for application in medicine and cosmetics. CINOGY is the innovation leader in plasma medicine and is the first company globally to have declared its conformity with EG Guideline 93/42/EEC for its PlasmaDerm® product family after passing the necessary conformity assessment procedures. As shown by the successful certification of our company according to DIN EN ISO 13485:2012, among others, we meet the quality requirements for the production of medical devices. CINOGY is located at the headquarters of the medical technology company Otto Bock HealthCare GmbH in Duderstadt, the global market leader in prosthetics.

▸ www.cinogy.de

Technische Universität Darmstadt

The Institute of Electromechanical Design (EMK) at Technische Universität Darmstadt has a strong focus on medical technology regarding scientific areas of measurement technology, micro technology, related production processes and specific design methodology.

The institute comprises a broad spectrum of facilities and laboratories including a clean room, a precision mechanics workshop, and state-of-the-art equipped labs for evaluation and validation of electromechanical components and systems.

Ongoing scientific and industry related projects comprise medical robotics, man-machine-cooperation exoskeletons, haptic interfaces, micro force sensors, and lower extremity orthoses.

Booth 05 ▸ www.emk.tu-darmstadt.de

Universitätsmedizin Rostock

RESPONSE
Partnerschaft für Innovation in der Implantattechnologie

"RESPONSE - Partnership for Innovation in Implant Technology", Twenty20 – Partnership for Innovation

By cooperation between partners from science and industry the consortium "RESPONSE – Partnership for Innovation in Implant Technology" offers the chance to put developments of medical products efficiently into practice within the entire translation chain and to accelerate the innovation processes.

Clinically relevant therapies with innovative implants leading to a relief of the health care system are aspired with the therapy of widespread diseases like cardiovascular diseases, cataract and glaucoma, amblyacousia and deafness and which are suitable to give a tissue and implant specific answer for the treatment of multimorbide patients.

RESPONSE develops implants especially considering their target tissue within the implant region. At the same time, the increase of the implant life time has to be considered by advanced biomaterials and designs that facilitate repeated interventions and reduce implant replacements.

RESPONSE is funded by the Federal Ministry of Education and Research within the Programme "Twenty20 – Partnership for Innovation".

Booth 11 ▸ www.response.uni-rostock.de

DGBMT VDE YoungNet

German Society for Biomedical Engineering (DGBMT) within VDE

The DGBMT promotes co-operation between scientists, engineers and physicians in the fields of research, development, application and teaching. It supports the exchange of knowledge between various disciplines of biomedical technology and seeks to accelerate the transfer of new technologies into medical application. The DGBMT is a society of the VDE Association for Electrical, Electronic & Information Technologies.

Booth 02 ▸ www.vde.com/dgbmt_en

MED-EL

MED–EL Elektromedizinische Geräte Gesellschaft m.b.H.

As the industry's technology leader in implantable hearing solutions, MED-EL products are the result of 30 years of focused research and a commitment by its founders to fostering a company culture of excellence. MED-EL has a strong tradition of advancing the technological and scientific foundation in the field of hearing implants. The company's consistent focus on research and development continues to fuel the pipeline of new ideas and innovations. Our broad portfolio of products ensures that we can provide a hearing implant solution to fit each candidate's unique hearing loss.

Booth 06 ▸ www.medel.com

Klee-Prize 2014 and Prize for Patient Safety in Medical Technology

Once again this year, the DGBMT awards the DGBMT prize of the Klee family foundation endowed with EUR 5000 for the promotion of young scientists.

The winner of the DGBMT prize of the Klee family foundation in 2014 is:

Dr. Karsten Seidl

„CMOS-Based Intracerebral Neural Interfaces“

The prize will be awarded by Prof. Dr. Olaf Dössel, chairman of the DGBMT prize committee.

This year again, the DGBMT also awards the Prize for Patient Safety in Medical Technology together with the Aktionsbündnis Patientensicherheit (APS). The prize is endowed with EUR 6500 and founded by Dr. med. Hans Heindl.

The winner of the prize in 2014 is:

Dipl.-Ing.
David Leonard Große Wentrup

„Integrity monitoring and route tracking of infusion systems“

The prize will be awarded by Prof. Dr. Uvo Hölscher, member of the DGBMT prize committee.

The **prize-giving ceremony and the laudatory speech** for the winners will take place on the occasion of the opening event at Hannover Congress Center (HCC) on **October 08, 2014 at 19:20 h**.

DGBMT Students Competition 2014

The BMT 2014 is taken as an occasion to host the DGBMT student competition.

This year 45 students have participated. The best three papers – submitted as posters or oral presentations – will receive certificates and prizes.

The assessment at the conference is based on the following criteria:

- Scientific content of the paper
- Scientific content of the presentation
- Quality of the presentation
- Timing in the presentation
- Demonstration of competence in the discussion

Prizes will be as follows:

1st prize:	**EUR 1 000**
2nd prize:	**EUR 600**
3rd prize:	**EUR 400**

The announcement of the winners and the award of certificates takes place at the closing event of the conference on **October 10, 2014 from 16:00 h** (Niedersachsenhalle B).

The awards are published after the conference both in the DGBMT members' magazine "Health Technologies" and on the DGBMT homepage.

▸ www.vde.com/dgbmt

Conference documents
You will receive your personal conference badge and the conference documents during the opening hours of the conference counter.

Conference language
The conference languages are German and English.

Poster session
Posters can be hung up and displayed from October 08, 2014, 9:00 h until October 10, 2014 16:00 h.

BMT Proceedings – online access
All accepted abstracts will be published online as a supplement to the regular volume of the Biomedical Engineering journal in the Walter de Gruyter (WdG) publishing house. All accepted abstracts and conference papers will also be prepared by WdG to be listed in PubMed.

Accepted abstracts and conference papers will be freely available on http://dx.doi.org/10.1515/bmte (WdG).

All information provided here was recorded to the best of our knowledge and represents our state of knowledge at the time of printing.

Conference secretariat
VDE Conference Service
Stresemannallee 15
60596 Frankfurt/Main
Tel.: +49 (0) 69 6308-477
Fax: +49 (0) 69 6308-144
E-mail: vde-conferences@vde.com

Conference counter (Foyer, HCC Main Entrance)
Hannover Conference Centre (HCC)
Theodor-Heuss-Platz 1-3
30175 Hannover
Germany

Opening hours of the conference counter

Tuesday, Oct. 07, 2014	16:00 – 18:00 h
Wednesday, Oct. 08, 2014	07:30 – 18:00 h
Thursday, Oct. 09, 2014	07:30 – 18:00 h
Friday, Oct. 10, 2014	07:30 – 16:00 h

You can register via our Online-Registration system on www.bmt2014.de

The conference fee includes:

- free online access to abstracts and conference papers, the printed conference programme, the daily coffee-breaks and lunches, get-together on October 08, 2014 in the Exhibition hall.

As a social event of the BMT 2014, we offer a special evening on October 09, 2014 at the kestnergesellschaft in Hannover.
Price: EUR 90,- per person. The reservation can also be done via the registration form. The number of participants is limited to max. 200 people). All the conference materials will be handed out at the conference registration desk to the participants.

Registration fees	Regular	
	Member	**Non-Member**
Institute, University, Clinic	EUR 380,-	EUR 460,-
Student**	EUR 140,-	EUR 160,-
PhD Student**	EUR 250,-	EUR 330,-
Physicians in further Education***	EUR 250,-	EUR 330,-
Personal Member	EUR 480,-	
Non-Member		EUR 560,-

Take advantage of the VDE/DGBMT membership by getting reduced participation fees.

* Participants applying for the membership fee must include the membership number in the registration form.
** For students up to 28 years/PhD students up to 35 years: a photocopy of the student card/certificate must be sent to: vde-conferences@vde.com. The prices are VAT free.

In case of cancellation, provided that written notice is received at the VDE-Conference Services before August 1, 2014 (except authors registration), the registration fee will be fully refunded less a handling fee of EUR 50,00. From August 1st, 2014 no refund will be made.

October 08, 2014, 18:15-19:30 h,
Room Niedersachsenhalle B, ground floor

Opening ceremony and greetings

(Speakers and presentations, see page 10–11)

October 08, 2014, 19:30 – 22:00 h,
Room Niedersachsenhalle A, ground floor

Get-Together

After the formal opening of the conference we would like to welcome you with a selected buffet and drinks starting from 19:30 h. Participants in the BMT 2014 can conclude the first conference day in a relaxed atmosphere. Participation is included in the conference fee. We hope you enjoy the evening and have interesting talks.

October 09, 2014 – 19:30 h,
kestnergesellschaft Hannover

Social Event and dinner

An institute for the exhibition of international contemporary art the kestnergesellschaft, located in the center of Hannover, is one of the largest and most well-known art associations in Germany. The kestnergesellschaft has maintained its existence since its foundation in 1916 despite the commotions and the explosive artistic, social and technical developments of the 20th century. In the 21st century it remains our goal to present important international artists with their latest works.

The contemporary visual landscape – which not only includes art, but also architecture, fashion or design – is the central interest, along with current music, literature or the theoretical positions of philosophy and the humanities.

With its exhibitions and their accompanying catalogues and guided tours, with the kestner lectures, kestner concerts and kestner editions and with the interdisciplinary kestner lab, the kestnergesellschaft offers a varied palette of events through which its communicates contemporary art and current theoretical ideas to its visitors and over four thousand members in a lively and sophisticated way at the highest international level.
Address: Goseriede 11, 30159 Hannover
+49 511 70 120-0, kestner@kestnergesellschaft.de

About the venue

In the centre of the city, in the centre of Germany the Hannover Congress Centre (HCC) is not only situated in the middle of nature but also in the middle of the city. The splendid park and gardens, bordering the city´s forest „Eilenriede“ merge seamlessly into the city centre.

The main railway station is only 10 minutes away from the HCC. Also, the Hannover Congress Centre can excellently be reached by car. It is only a short distance of 500 metres to the “Messeschnellweg” (A37), a motorway that connects the main highways A2 and A7. And last but not least the quick transport link to Hannover´s international airport.

The Hannover Congress Centre is situated both in an idyllic environment as well as close to the city centre which is easily reachable by superb public transport. You will certainly enjoy your stay.

Venue address

Hannover Congress Centre (HCC)
Theodor-Heuss-Platz 1-3
30175 Hannover
Germany
www.hcc.de

Hotel Information

For questions concerning the hotel reservation please contact:

smart and more GmbH
Oehleckerring 28 – 30
22419 Hamburg
Germany
Fon: +49 40 88 171 234
Fax: +49 40 88 171 221
web: www.smartandmore.de

By public transport

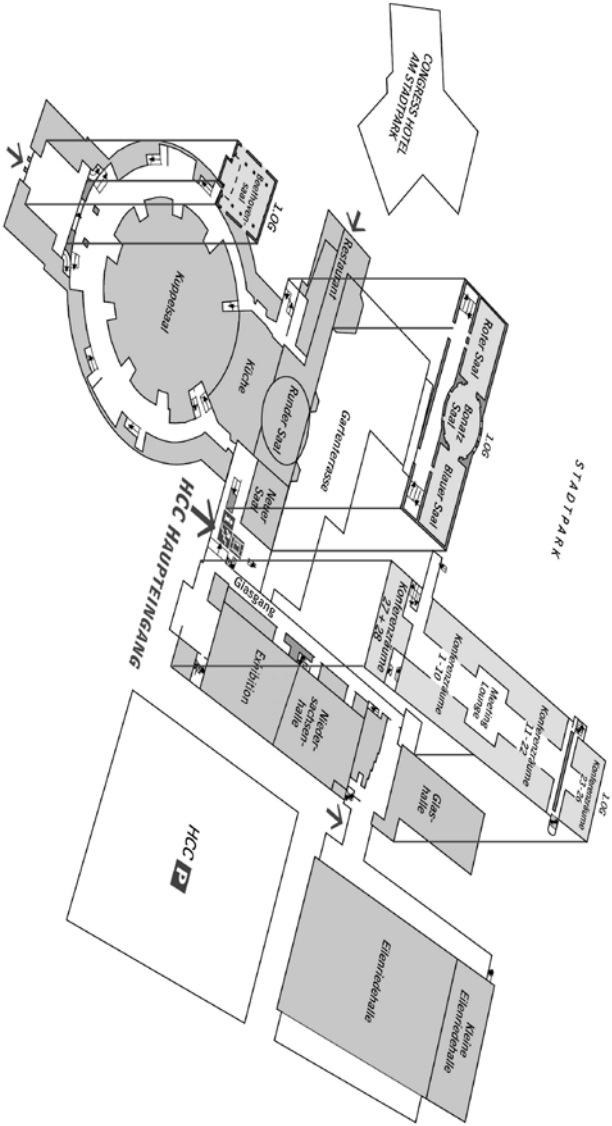
■ From Hannover Main Station (“Hauptbahnhof”) by bus no. 128 towards “Peiner Straße” or bus no. 134 towards “Bus Depot Süd” directly to Hannover Congress Centrum. Distance: 10 minutes.

Ticket can be purchased from driver.

■ From the airport Hannover-Langenhagen by urban train (“S-Bahn”) No. S5 to Main Station (“Hauptbahnhof”). Continue from there by bus No. 128 towards “Peiner Straße” or bus No. 134 towards “Bus Depot Süd” directly to Hannover Congress Centrum. Distance: approx. 35 minutes.

Please purchase ticket for whole journey with exact amount of coins from ticket vending machine on train platform at airport.

Timetable enquiries
All timetables for the Hannover region are available online.
Airport Hannover-Langenhagen
Flight plans are available online.



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	Nieders. Halle B	Bonatz Saal	Blauer Saal	Roter Saal	KR 7+9	KR 8+10	KR 11+13	KR 12+14	Runder Saal
8:30	KEYNOTE (Niedersachsenhalle B) Prof. Dr. Erich Wintermantel								
9:00	BREAK – TRADE EXHIBITION								
9:15	Imaging & Image Processing: Optical Coherence Tomography 19	FS: Micro-Nano Technologies support Bio-Medicine 20	VDE MedTech (1) 21	Degradable Implantate auf der Basis von Polymeren und Metallen 22	FS: Tools & devices for Neurotechnology (BrainLinks-Brain-Tools Exzellenz-cluster ExC 1086) 23	Biosignal Processing: Methods & Applications 25	Usability & Quality Control for Medical Technology 26	Clinical & Ambulatory Monitoring (1) 27	Poster Session Tracks D, B, F, LUMEN 28
10:45	COFFEE BREAK – TRADE EXHIBITION								
11:15	Imaging & Image Processing: Image Analysis & processing (1) 33	SFB 599: Modelling und Simulation 34	VDE MedTech (2) 35	DGMP Session 36	DGBM Session 37	FS: Biosignal-analyse in der Schlafforschung 38	Training & Simulation (1) 39	FS: Patient Monitoring in der Anästhesie 40	Poster Session Tracks E, H, L, G, O 41
12:45				DGBMT Members' Meeting	LUNCH BREAK – TRADE EXHIBITION				
13:45									

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	Nieders. Halle B	Bonatz Saal	Blauer Saal	Roter Saal	KR 7+9	KR 8+10	KR 11+13	KR 12+14	Runder Saal	KR 27+28
13:45	KEYNOTE (Niedersachsenhalle B) Prof. Dr. Erwin Hochmair									
14:15	BREAK – TRADE EXHIBITION									
14:30	Prosthetics & implants for bones & joints 47	SFB 599: Herstellung Implantate 48	VDE MedTech (3) 49	FS - Hearing4All - Diagnostik 50	Cellular, Tissue & Bioengineering: Bioreactor Technologies & Signals 51	Modelling & Simulation (1) 53	FS: EAMBES: Medical Device Directive/ Regulatory 54	Home Health care & AAL 55	Poster Session Tracks C & I (1) 56	
16:00	COFFEE BREAK – TRADE EXHIBITION									
16:30	Vascular implants & passive implants 65	SFB 599: In Vitro Testverfahren 66	VDE MedTech (4 67	FA: Kopfimplantate 68	FS: Innovation management in medical engineering 69	FS: MEG/EEG modeling 70	FS: EAMBES: Biohybrid Implants & Regulatory Affairs 71	FS: mHealth 72	Poster Session Track I (2) 61	Presentations of the Award Winners 73
18:15	CONFERENCE OPENING									
19:30	GET TOGETHER									

Thursday, October 9, 2014

	Nieders. Halle B	Bonatz Saal	Blauer Saal	Roter Saal	KR 7+9	KR 8+10	KR 11+13	KR 12+14	Runder Saal
8:30 – 9:00	KEYNOTE (Niedersachsenhalle B) Prof. Dr. Thomas Schmitz-Rode								
	BREAK – TRADE EXHIBITION								
9:15 – 10:45	Imaging & Image Processing: Magnetic Resonance Imaging 75	Magnetic Methods in Medicine 76	FA: Biomaterialien mit Implantatbezug (1) 77	FS: Advances in Electrode Development 78	FS: Automation in Medical Technology 79	Biosignal Processing: Cardiovascular System (1) 80	Sektion Chirurgische Forschung: Medizinische Implantate ... 81	FS: Navigation for surgical interventions: Systems & procedures 82	Poster Session Tracks M & K 83
	COFFEE BREAK – TRADE EXHIBITION								
11:15 – 12:45	Imaging & Image Processing: Image Analysis & processing (2) 87	CURAC special session „Digital Operating Room" 88	FA: Degradable Implantate auf der Basis von Polymeren und Metallen 89	FS - Hearing4All - Hörimplantate 90	FS: Detection, Prevention & Therapy of Accidental Hyperthermia 91	Biosignal Processing: Miscellaneous Topics 92	Sektion Chirurgische Forschung: Impulsreferate: European Medical Device ... 93	FS: Interoperability between e-health Devices 94	Poster Session Tracks J, SFB & Q 95
13:45	LUNCH BREAK – TRADE EXHIBITION								

	Nieders. Halle B	Bonatz Saal	Blauer Saal	Roter Saal	KR 7+9	KR 8+10	KR 11+13	KR 12+14	Runder Saal
13:45 – 14:15	KEYNOTE (Niedersachsenhalle B) Prof. DDr. Winfried Mayr								
	BREAK – TRADE EXHIBITION								
14:30 – 16:00	FS: MR Safety of medical devices 99	SFB 599: Resorbierbare Implantate 100	FA: Oberflächenfunktionalisierte Implantate 101	FS - Hearing4All - Audio Technology 102	Cellular, Tissue & Bioengineering: Biohybrid Implants 103	Modelling & Simulation (2) 104	FS: Image guided interventions 105	Miscellaneous Innovations: From Materials & Sensors to Diagnosis & Therapy 106	Poster Session Track A 107
	COFFEE BREAK – TRADE EXHIBITION								
16:30 – 19:00	Neural repair & neural implants 112	SFB 599: In vivo and Transfer 113	FA: BioNanomaterialien 114	Why do FES-solutions reach market and patient, & others similarly important not? 115	FS: Hygiene & Biomed. Eng.: Not just an issue for sterile application of medical products? 116	Modelling & Simulation (3) 117	Devices & Systems for Surgical Interventions (1) 118	BMT-Aus- und Weiterbildung (2) 119	Poster Session Track P 120
	SOCIAL EVENT								

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Friday, October 10, 2014

	Nieders. Halle B	Bonatz Saal	Blauer Saal	Roter Saal	KR 7+9	KR 8+10	KR 11+13	KR 12+14	Runder Saal
8:30 – 9:00	KEYNOTE (Niedersachsenhalle B) Prof. Dr.-Ing. habil. Klaus-Peter Schmitz								
	BREAK – TRADE EXHIBITION								
9:15 – 10:45	FS: Intelligent Implants (P) 125	SFB 599: Hörimplantate (A) 127	FA: Biomaterialien mit Implantatbezug (2) (D) 129	FS: Patient centered information management: challenges for biomed. eng. & med. informatics (K) 130	Cellular, Tissue and Bioengineering: Biomaterials for Regenerative Medicine (D) 131	Biosignal Processing: Cardiovascular System (2) (C) 132	Devices and Systems for Surgical Interventions (2) (F) 133	Wriggers Session (1) (M) 134	CURAC „Computer & robot assisted otologic surgery and implantations" (H) 135
	COFFEE BREAK – TRADE EXHIBITION								
11:15 – 12:45	Active and intelligent implants (P) 136	SFB 599: Orthopädische Implantate (P) 137	Biomaterials and Biocompatilibity (2) (A) 138	Hearing for Tomorrow (P); Acatech Study 139	FS: Magnetic nanoparticles (J) 140	Modelling and Simulation (4) (M) 141	FS: Assistance in pelvic surgery for nerve protection (pIONM) (E) 142	Wriggers Session (2) (M) 143	FS: AAL in Professional and Academic Education - Offers and Potential (G) 144
	LUNCH BREAK – TRADE EXHIBITION								

	Nieders. Halle B	Bonatz Saal	Blauer Saal	Roter Saal	KR 7+9	KR 8+10	KR 11+13	KR 12+14	Runder Saal
13:45 – 16:00	KEYNOTE (Niedersachsenhalle B) Dr. Thilo Weichert								
14:30 – 16:00	Junges Forum trifft Alte Hasen - "Die Entwicklung der Hochfrequenzablation (Q) 146	SFB 599: Dentale Implantate (P) 147	Prevention and Rehabilitation Engineering (O) 148	FS - Hearing4All - Auditorische Hörsysteme (L) 149	FS: LUMEN - Luebeck Medical Eng.. A joint research project for innovative ... (E) 150	Biosensors and Bioanalytics (B) 151	FS: Contactless measurement of biosignals: opportunities and limitations (E) 152	FS: Methods for Multimodal Analysis of Brain Data (C) 153	Medical Information Systems, Telemedicine, eHealth (K) 154
	CLOSING AND AWARDS CEREMONY								

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- A Biomaterials and Biocompatibility
- B Biosensors and Bioanalytics
- C Biosignal Processing
- D Cellular, Tissue and Bioengineering
- E Clinical and Ambulatory Monitoring
- F Devices and Systems for Surgical Interventions
- G Home Health care and AAL
- H Image based Intervention
- I Imaging and Image Processing
- J Magnetic Methods in Medicine
- K Medical Information Systems, Telemedicine, eHealth, mHealth
- L Miscellaneous and Special Sessions
- M Modelling and Simulation
- O Prevention and Rehabilitation Engineering
- P Prosthetics and Implants
- Q Training and Further Education
- R Usability and Risk Management

FS: Focus session

Track Title Overview

A	Biomaterials and Biocompatibility
B	Biosensors and Bioanalytics
C	Biosignal Processing
D	Cellular, Tissue and Bioengineering
E	Clinical and Ambulatory Monitoring
F	Devices and Systems for Surgical Interventions
G	Home Health care and AAL
H	Image based Intervention
I	Imaging and Image Processing
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P	Prosthetics and Implants
Q	Training and Further Education
R	Usability and Risk Management

DGBMT GERMAN SOCIETY FOR BIOMEDICAL ENGINEERING WITHIN VDE

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