Dear colleagues,

We kindly invite you to this Indo-German workshop on “Strategies for improved bone replacement materials and orthopaedic implants: design – manufacturing – technologies”. The aim is to bring together a number of active researchers from the biomaterials, tissue engineering and medical field to present and discuss state-of-the-art of rapid prototyping technologies for implant design and other emerging manufacturing techniques for novel biomaterials and tissue engineering constructs for regeneration of musculoskeletal tissues. Conceptual contribution and synergistic interaction among academia and industries will strongly influence the direction of translational research, and consequent conversion to applied technology.

The programme covers contributions of experienced scientists and clinicians, as well as of young researchers. Beside the Indian delegation and speakers from the host institutions in Dresden and Chemnitz, colleagues from other German universities and some other European countries will also present their newest research results. Therefore, this symposium is expected to provide a stimulating environment for scientific discussions and to give valuable suggestions concerning translation of research into clinical application.

The financial support of Indo-German Science and Technology Centre (IGSTC), jointly funded by German Ministry for Education and Research (BMBF) and Department of Science and Technology (DST, Government of India) is gratefully acknowledged.

We are looking forward to meet you in Dresden in February!

Best regards,

Prof. Dr. Michael Gelinsky, Technische Universität Dresden
Prof. Dr. Bikramjit Basu, Indian Institute of Science, Bangalore
Prof. Dr. Anindya Deb, Indian Institute of Science, Bangalore
Dipl.-Ing. Christian Hannemann, Fraunhofer Institute for Machine Tools and Forming Technology (IWU), Chemnitz
Dr. Kanyakumari Datta, Data Metallurgical Company, Kolkata

Federal Ministry of Education and Research

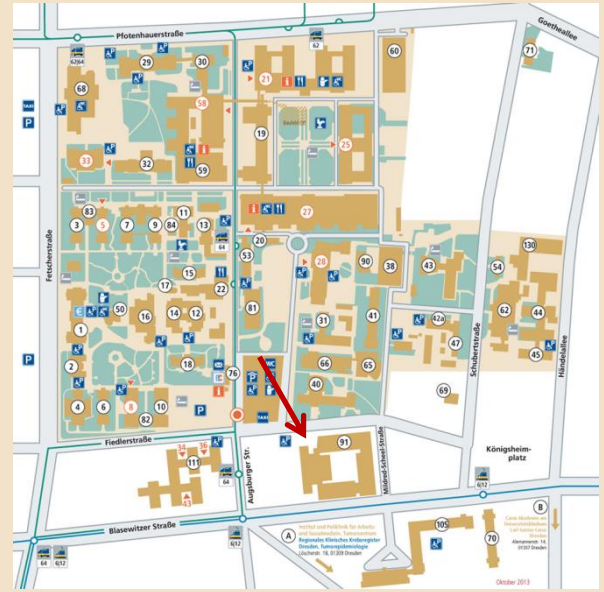
सत्यमेव जयते
Department of Science & Technology (DST)
Ministry of Science & Technology
Government of India

Venue

Technische Universität Dresden -
Medical Faculty *Carl Gustav Carus*

Medical Theoretical Centre
(MTZ), House 91
Fiedlerstrasse 42
01307 Dresden

tu-dresden.de/med/tfo



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Public Transport:
Tram: Line 6 and 12 (Stop „Augsburger Straße/Universitätsklinikum“)
Bus: Line 64 (Stop „Universitätsklinikum“)

Universitätsklinikum
Carl Gustav Carus
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Carl Gustav Carus 1789 – 1869

IGSTC

Joint Indo-German Symposium

19.-21. February, 2014

Strategies for improved bone replacement materials and orthopaedic implants: design – manufacturing – technologies

INDIAN INSTITUTE OF SCIENCE

TECHNISCHE UNIVERSITÄT DRESDEN

Fraunhofer IWU

Programme: 19th of February, MTZ, Lecture Hall 1	
9.00	**Registration**
9.30	**Welcome and Opening Ceremony of the Scientific Programme**
10.00	**Coffee Break**
10.30	**Session 1: Biomaterials Design and Manufacturing**
10.30	Bikramjit Basu (IISc Bangalore): Development of multifunctional bioceramics and polymer-ceramic based hybrid biocomposites for orthopedic applications: a new paradigm
11.00	Michael Gelinsky (TU Dresden): 3D plotting of complex scaffolds and tissue engineering constructs
11.30	Anindya Deb (IISc Bangalore): Prediction of the Behavior of Total Knee Replacement Implants using Explicit Finite Element Modeling and an Exploration of the Performance of Alternative Designs
12.00	Christian Hannemann (Fraunhofer IWU Chemnitz): Porous metal implant structures – a human bone copy?
12.30	**Lunch, Posters and Exhibition**
13.30	**Session 2: Rapid Prototyping Technologies I**
13.30	Alok Kumar (IISc Bangalore): Fabrication of biomaterial scaffolds with gradient porosity using 3D printing
13.50	Bernhard Müller (Fraunhofer IWU Dresden) Multifunctional implants realised by additive manufacturing
14.10	Rainer Detsch (University Erlangen): Challenges in biofabrication of alginate based matrices for vascularized bone tissue regeneration
14.40	Petra Kluger (Fraunhofer IGB Stuttgart) Additive Manufacturing of bio-inspired blood vessel systems
15.10	**Coffee Break**
15.30	**Session 3: Drug Delivery and Rapid Prototyping Technologies II**
15.30	Kurosch Rezwan (University Bremen): Calcium phosphate-based materials for advanced drug delivery
16.00	Uwe Gbureck (University Würzburg): 3D powder printing of drug loaded ceramic implants
16.30	Rahul Akkineni (TU Dresden): Design and fabrication of core/shell structures by 3D plotting: applications in tissue engineering
16.50	**Coffee Break**
17.10	**Session 4: Clinical Application and Commercialisation**
17.10	Tanvir Momen (Apollo Gleneagles Hospital Kolkata): Hip replacement: surgical techniques and advancements with special emphasis on metal-on-metal hip replacement and prognosis
17.40	Maik Stiehler (University Hospital Dresden): Biomaterials in orthopaedic surgery: Metallic implants, bone grafts and bone substitutes
18.10	Aroop Kumar Dutta (Excel Matrix Biological Devices Pvt. Ltd., Hyderabad): Assembly line for tissues manufacturing
18.40	Gediminas Kostkevicius (Baltic Orthoservice, Kaunas, Lithuania): Mass customization of orthopedic implants and patient specific instruments: the business model
19.10	**Get Together (MTZ Foyer)**
Programme 20th of February, MTZ, Lecture Hall 1	
8.30	**Session 5: Metallic Implants I**
8.30	Rainer Bader (University Rostock): Evaluation of the bone ingrowth of numerically optimized and additive manufactured open-porous titanium bone scaffolds
9.00	Kanyakumari Datta (Data Metallurgical Company, Kolkata):Choice of Materials for Orthopaedic Implants : A Study of the Suitability of Cellular Metals using Finite Element Modelling
9.30	Annett Gebert (Leibniz IFW Dresden): New Ti-Nb-based alloys for implant applications
10.00	Christine Schöne (TU Dresden): Individual contour adapted functional implant structures in titanium – from the theoretical model to the practical application
10.30	**Coffee Break**
11.00	**Session 6: Metallic Implants II and Biomechanics**
11.00	W. Mark Rainforth (Sheffield University, UK): Dynamic surface microstructural changes during tribological contact that determine the wear behaviour of hip prostheses; metals and ceramics
11.30	Uta Kremling (IMA GmbH Dresden): Mechanical and tribological test methods for joint implants
11.50	Malhar Rao N. Kumar (Hosmat Hospital Bangalore): Clinical and engineering assessments of the effects of surgical procedures and fixations in spine
12.20	R. Srinivas Gunti (IISc Bangalore): Experimental and numerical insights into the mechanical behaviour of a truncated vertebral unit under compressive static and impact dynamic loads
12.40	Christian Rotsch (Fraunhofer IWU Dresden): Application of shape memory alloys for active loosening protection of implant structures
13.00	**Lunch, Posters and Exhibition**
14.30	**Session 7: Ceramics**
14.30	Manoj Kumar Mitra (Jadavpur Univ. Kolkata): Processing and characterization of ceramic materials in implants
15.00	Janis Locs (Riga Technical Univ., Latvia): Synthesis and application of calcium phosphates in maxillofacial and orthopaedic surgery
15.20	Hari Krishna Varma (SCTIMST Thiruvananthapuram): Tailor made bioactive ceramics for specialty clinical applications
15.50	Matthias Schumacher (TU Dresden): Modified calcium phosphate bone cements for the local delivery of therapeutic ions in osteoporotic bone defects
16.10	**Coffee Break**
16.40	**Session 8: Electric/Magnetic Stimulation, Polymers**
16.40	Debasish Sarkar (NIT Rourkela): Hydroxyapatite nano-particles and nanobiocomposite scaffold for protein adsorption/release
17.00	Greeshma Thrivikraman Nair (IISc Bangalore): Interplay of substrate conductivity and electric stimuli in directing cell fate on implantable biomaterials
17.20	Sunil Kumar Boda (IISc Bangalore): Differential response of prokaryotic and eukaryotic cells on engineered biomaterials in magnetic field stimulated culture conditions
17.40	Ravikumar Krishnamurthy (IISc Bangalore): Bioelectric stress induced cell deformation and stability in an electric field stimulated medium
18.00	Yashoda P. Chandorkar (IISc Bangalore): Crosslinking as a strategy to design multifunctional, tunable polymer matrices for tissue engineering applications
18.20	**Closing Remarks**
21st of February – Project Meetings and Lab Demonstration	