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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



Federal Ministry
of Education
and Research



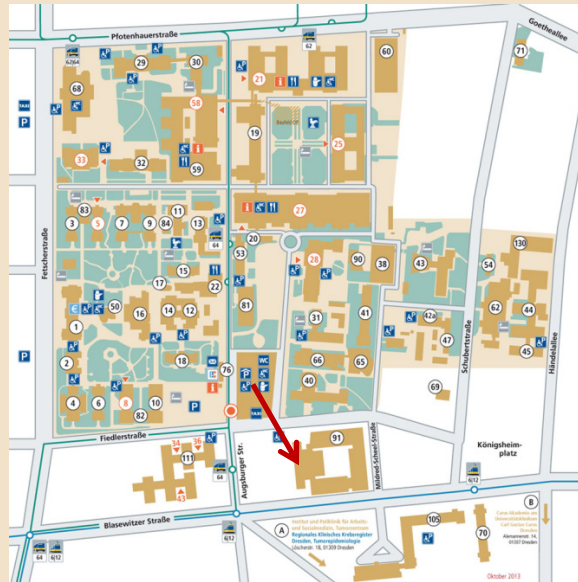
सत्यमेव जयते
Department of Science & Technology (DST)
Ministry of Science & Technology
Government of India

Venue

Technische Universität Dresden –
Medical Faculty Carl Gustav Carus

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

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Public Transport:

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

Universitätsklinikum
Carl Gustav Carus
DIE DRESDNER.



Indo-German
Workshop

19.-21. February, 2014

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



TECHNISCHE
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Fraunhofer
IWU

Programme: 19 th of February, MTZ, Lecture Hall 1					
9.00	Registration	16.30	Rahul Akkineni (TU Dresden): Design and fabrication of core/shell structures by 3D plotting	11.50	Malhar Rao N. Kumar (Hosmat Hospital Bangalore): Clinical and engineering assessments of the effects of surgical procedures and fixations in spine
9.30	Welcome and Opening Ceremony of the Scientific Programme	16.50	Coffee Break	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
10.00	Coffee Break	17.10	Session 4: Clinical Application and Commercialisation	12.40	Christian Rotsch (Fraunhofer IWU Dresden): Application of shape memory alloys for active loosening protection of implant structures
10.30	Session 1: Biomaterials Design and Manufacturing	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	13.00	Lunch, Posters and Exhibition
10.30	Bikramjit Basu (IISc Bangalore): Designing biomaterials for human health care	17.40	Maik Stiehler (University Hospital Dresden): Biomaterials in orthopaedic surgery: Metallic implants, bone grafts and bone substitutes	14.30	Session 7: Ceramics
11.00	Michael Gelinsky (TU Dresden): 3D plotting of complex scaffolds and tissue engineering constructs	18.10	Aroop Kumar Dutta (Excel Matrix Biological Devices Pvt. Ltd., Hyderabad): Assembly line for tissues manufacturing	14.30	Manoj Kumar Mitra (Jadavpur Univ. Kolkata): Processing and characterization of ceramic materials in implants
11.30	Anindya Deb (IISc Bangalore): Prediction of the behaviour of total knee replacement implants using explicit-dynamic finite element analysis and an exploration of the performance of alternative designs	18.40	Gediminas Kostkevicius (Baltic Orthoservice, Kaunas, Lithuania): Mass customization of orthopedic and patient specific implants: the business model	15.00	Janis Locs (Riga Technical Univ., Latvia): Synthesis and application of calcium phosphates in maxillofacial and orthopaedic surgery
12.00	Christian Hannemann (Fraunhofer IWU Chemnitz): Porous metal implant structures – a human bone copy?	19.10	Get Together (MTZ Foyer)	15.20	Hari Krishna Varma (SCTIMST Thiruvananthapuram): Tailor made bioactive ceramics for specialty clinical applications
12.30	Lunch, Posters and Exhibition	Programme 20 th of February, MTZ, Lecture Hall 1		15.50	Matthias Schumacher (TU Dresden): Modified calcium phosphate bone cements for the local delivery of therapeutic ions in osteoporotic bone defects
13.30	Session 2: Rapid Prototyping Technologies I	8.30	Session 5: Metallic Implants I	16.10	Coffee Break
13.30	Alok Kumar (IISc Bangalore): Fabrication of biomaterial scaffolds with gradient porosity using 3D printing	8.30	Rainer Bader (University Rostock): Evaluation of the bone ingrowth of numerically optimized and additive manufactured open-porous titanium bone scaffolds	16.40	Session 8: Electric/Magnetic Stimulation, Polymers
13.50	Bernhard Müller (Fraunhofer IWU Dresden) Multifunctional implants realised by additive manufacturing	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	16.40	Indu Bajpai (IIT Kanpur): Bactericidal property of spark plasma sintered multifunctional HA-Fe ₃ O ₄ magnetic composites in static magnetic field stimulated growth medium
14.10	Rainer Detsch (University Erlangen): Challenges in biofabrication of alginate based matrices for vascularizes bone tissue regeneration	9.30	Jürgen Eckert (Leibniz IFW Dresden): Novel β -type Ti-Nb-based alloys with reduced stiffness for long-term implant applications	17.00	Greeshma Thrivikraman Nair (IISc Bangalore): Interplay of substrate conductivity and electric stimuli in directing cell fate on implantable biomaterials
14.40	Petra Kluger (Fraunhofer IGB Stuttgart) Additive Manufacturing of bio-inspired blood vessel systems	10.00	Ralph Stelzer (TU Dresden): Individual contour adapted functional implant structures in titanium. From the theoretical model to the practical application	17.20	Sunil Kumar Boda (IISc Bangalore): Differential response of prokaryotic and eukaryotic cells on engineered biomaterials in magnetic field stimulated culture conditions
15.10	Coffee Break	10.30	Coffee Break	17.40	Ravikumar Krishnamurthy (IISc Bangalore): Bioelectric stress induced cell deformation and stability in an electric field stimulated medium
15.30	Session 3: Drug Delivery and Rapid Prototyping Technologies II	11.00	Session 6: Metallic Implants II and Biomechanics	18.00	Yashoda P. Chandorkar (IISc Bangalore): Crosslinking as a strategy to design multifunctional, tunable polymer matrices for tissue engineering applications
15.30	Kurosch Rezwan (University Bremen): Calcium phosphate-based materials for advanced drug delivery	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	18.20	Closing Remarks
16.00	Uwe Gbureck (University Würzburg): 3D powder printing of drug-loaded implants	11.30	Uta Kremling (IMA GmbH Dresden): Mechanical and tribological test methods for joint implants	21 st of February – Project Meetings and Lab Demonstration	