

1ST ANNOUNCEMENT

# MEDICAL PHYSICS AND BIOMEDICAL ENGINEERING

## WORLD CONGRESS 2009

For the Benefit of  
the Patient.



September 13 – 18  
Munich/Germany



German Society  
for Medical Physics



DGBMT

GERMAN SOCIETY FOR  
BIOMEDICAL ENGINEERING WITHIN VDE

IFMBE



VDE

## Where will you be in September 2009?



W. Schlegel

O. Dössel

We would like to invite you to attend the [World Congress on Medical Physics and Biomedical Engineering to be held in Munich, Germany, from September 13-18, 2009.](#)

Incorporating such key aspects as information and communication technologies, micro- and nano-systems, optics and biotechnology, the fields of Medical Physics, Biomedical Engineering and Bioengineering are the main drivers of progress in medicine and healthcare. Taking place every three years, the World Congress is a major event where scientists can deepen their knowledge in their own field of expertise and also explore related areas.

The World Congress 2009 will not only provide first-hand information on new developments, advanced technologies and current and future applications, it will also be an ideal opportunity for international exchange. It works as an inter- and multidisciplinary platform bringing together people from basic research, r&d, industry and medical applications. We expect more than 4,000 visitors to attend.

Located at the very heart of Europe, Germany has a long tradition of innovation in medicine and medical technology devices. Major companies and a large part of its scientific community are based in southern Germany. With its fascinating mix of history, culture, recreation and it's cosmopolitan flair, Munich makes an ideal choice for the World Congress 2009.

Our teams are already working to ensure the success of the World Congress on Medical Physics and Biomedical Engineering in Munich.

We look forward to seeing you there in 2009!

A handwritten signature in blue ink that reads "W. Schlegel".

Wolfgang Schlegel  
Congress-President

A handwritten signature in blue ink that reads "Olaf Dössel".

Olaf Dössel  
Congress-President

## General information

### Dates

September, 13 (Sunday) – 18 (Friday), 2009

### Location

International Congress Center Munich (ICM),  
Munich, Germany

### Congress language

English

### Scientific visits

The area is striving to consolidate its position as Europe's top biomedicine region. There are numerous institutes, hospitals and companies to be visited.

### Social events

Welcome party, banquet, farewell dinner and various entertainments are planned.

### Accommodation

A range of hotels is available near the International Congress Center Munich, in downtown Munich and in the surrounding areas. Further information will be provided with the Advance Programme.

### Transportation

Germany's second-largest airport guarantees excellent continental and intercontinental air connections to 65 countries and 237 destinations. Munich's famous public transport system will be free of charge for participants.

### Congress Secretariat

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ICM Munich

## Why Germany?



10<sup>7</sup>m



10<sup>6</sup>m



10<sup>3</sup>m



10<sup>0</sup>m

The medical industry in Germany has a long tradition of innovation. Great names such as Wilhelm Conrad Röntgen or Robert Koch testify to a spirit of research that has brought lasting advances in the development and production of medical technology devices and other products for the healthcare market.

The large number of highly qualified researchers and doctors in Germany offer an ideal environment for companies to create innovations in the medical sector and to further improve products and techniques. More than 40 institutions offer study programs in the fields of Medical Physics, Biomedical Engineering and Clinical Engineering. Supported by Germany's Federal Ministry of Education and Research "Centers of Excellence" have been formed and clustered in a dense network.

Geographically, Germany is at the very heart of Europe. It's the continent's commercial hub, linking North and South, East and West. Germany shares borders with nine other European countries, making it the most "connected" state of the continent.

Taken as a whole, the European market for medical devices is enormous, representing 30 percent of the worldwide total. Some 40 percent of Europe's medical device manufacturing jobs are in Germany. In 2002 the country employed more than 140 thousand people in the sector, representing two percent of its domestic manufacturing workforce.

In Germany, some 1,100 companies are involved in medical device production. In the eight-year period up to 2004, sales of German medical technology rose from 9.6 billion euros to more than 14 billion. Most of the growth was driven by demand from abroad: over half of all German medical technology products are exported. Roughly ten percent of sales in the German med-tech sector are ploughed back into R&D. The commitment to innovation is reflected in the personnel resources allocated to R&D. The med-tech companies overall devote some 16 percent of their personnel to research and development.

# Areas of interest

## 1. Radiation Oncology

- Immobilization and Positioning/ Stereotaxy
- Therapy Planning
- Optimization in Treatment Planning
- Dose Calculation Algorithms/ Monte Carlo
- Image Guided Radiotherapy/ Adaptive Radiotherapy
- Beam Delivery
- Hadron Therapy
- Dosimetry and QA in Radiotherapy
- Brachytherapy
- Biological Models in Radiotherapy

## 2. Diagnostic Imaging

- X-Ray and Mammography
- CT
- MRT
- Ultrasound
- SPECT und PET
- Molecular Imaging and Nanotechnology
- Impedance Tomography
- Bioelectric and Biomagnetic Source Imaging
- Optical Imaging, Microscopic Imaging, OCT

## 3. Radiation Protection and Dosimetry, Biological Effects of Ionizing and Non-Ionizing Radiation

- Dosimetric Techniques
- Phantoms for Radiation Protection
- Radiation Protection of Patients and Personnel
- Estimation of Doses and Reference Levels in Diagnostic Imaging
- Radiation Protection in Radiotherapy

- Biological Effects of Ionizing Radiation - Low Level and Imaging
- Biological Effects of Ionizing Radiation - Therapy
- Biological Effects of NonIonizing Radiation

## 4. Image Processing, Biosignal Processing, Modelling and Simulation, Biomechanics

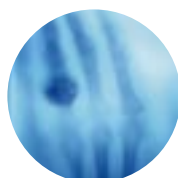
- Image Processing and Visualization
- Segmentation and Registration
- VR in Medicine
- Biosignal Processing
- Modelling and Simulation
- Computational Biology & Physiome
- Biomechanics
- Flow in the Cardiovascular System

## 5. Information and Communication in Medicine, Telemedicine and e-Health

- Storage and Retrieval, PACS
- Computer Assisted Diagnosis and Expert Systems
- Hospital Information Systems
- Telemedicine
- e-Health and Electronic Patient Record
- Clinical Workflow

## 6. Surgery, Minimum Invasive Interventions, Endoscopy and Image Guided Therapy

- Image Guided Interventions
- Endoscopy & Endoscopic Interventions
- Navigation and Robotics in Medicine
- Laser and Ultrasound Therapy
- Computer Assisted Surgery
- Minimum Invasive Interventions
- Catheter Interventions



### 7. Diagnostic and Therapeutic Instrumentation, Clinical Engineering

- Monitoring
- Bioelectric and Biomagnetic Signals
- Bioimpedance
- Dialysis and Apheresis Systems
- Cardiovascular Systems
- Pulmonary Systems
- Sleep
- Lasers in Medicine
- Anaesthesia Systems
- Injection and Infusion Systems
- Clinical Engineering

### 8. Micro- and Nanosystems in Medicine, Active Implants, Biosensors

- Active Implants
- Drug Delivery
- In-vitro Diagnosis, Lab-on-Chip
- Biosensors, Bio-Chips
- DNA-Chips, Protein-Chips

### 9. Neuroengineering, Neural Systems, Rehabilitation and Prosthetics

- Neuroengineering
- Rehabilitation
- Prosthetics
- Biomechanics, Gait Analysis

### 10. Biomaterials, Cellular and Tissue Engineering, Artificial Organs

- Artificial Tissues and Organs
- Biomaterials
- Biocompatibility and Biomimetics
- Bioreactors
- Scaffolds and Bioimplants
- Kryoconservation
- Passive Implants, Stents, Endoprosthesis
- Cellular Engineering

### 11. Biomedical Engineering for Audiology, Ophthalmology, Emergency and Dental Medicine

- Audiology
- Ophthalmology
- Emergency
- Dental Medicine

### 12. General Subjects

- Education and Training
- Engineering and Physics Professionals in Medicine
- Accreditation and Certification
- Health Economics
- Health Technology Assessment HTA
- Ergonomy in Medicine
- Medical Engineering and Medical Physics in Developing Countries

### 13. Special Topics and Workshops

- Linking Proteomics and Genomics with Biomedical Engineering and Medical Physics
- Linking Physiome with Patients Needs
- Bridging Fundamental Research with Medical Technology
- Medical Engineering and Medical Physics in case of Catastrophies

## Highlights

- Plenary sessions and leading experts as invited speakers
- Programme themes and tracks focussing on nearly all aspects of Medical Physics, Biomedical Engineering and Bioengineering
- Workshops and tutorials
- Minisymposia and special sessions
- Exhibition showcasing products and innovations
- Various recruitment events

Interested in receiving information updates?

Please register at  
[www.wc2009.org](http://www.wc2009.org)



## The fascination of Munich

Few cities in the world offer such a fascinating mix of history, innovation, culture and recreation as Bavaria's capital, Munich. With a population of over 1.3 million, the city combines delightful traditions with a dynamic and cosmopolitan flair, world-class cultural life, over 4,000 high-tech companies and the unmatched attraction of nearby lakes, castles, villages and the Alps.

Munich offers everything to please and pleasure its visitors – from Europe's newest airport, four splendid opera houses and endless parks, to the Oktoberfest (known by the locals as the "Wiesn"), the world's most spectacular festival. In fact, Congress participants can join the 176th celebration, starting on September, 19th 2009 for the outstanding beer and the fun of celebrating with well over 6 million visitors from around the world. American writer Tom Wolfe summed it up: "Munich is one of the most wonderful and charming cities in the world." See for yourself!

Munich also pampers its guests with state-of-the-art public transportation, a broad selection of fine hotels and restaurants and – naturally – one of the best equipped trade fair centers in the world. The ICM, directly linked to the New Munich Trade Fair Center, is one of the most efficient facilities of its kind. Needless to say, the ICM covers every possible organization need to ensure that everything runs smoothly for a truly memorable event.



Marienplatz



Nymphenburg Palace



Palace Neuschwanstein



Oktoberfest

## The Hosts

### **IUPESM – [www.iupesm.org](http://www.iupesm.org)**

The International Union for Physical and Engineering Sciences in Medicine represents the combined efforts of more than 40,000 medical physicists and biomedical engineers working in the physical and engineering science of medicine.

### **IOMP – [www.iomp.org](http://www.iomp.org)**

The International Organization for Medical Physics represents over 16,000 medical physicists worldwide and 75 national member organisations.

### **IFMBE – [www.ifmbe.org](http://www.ifmbe.org)**

The International Federation for Medical and Biological Engineering, is primarily a federation of national and transnational organizations. The Federation has an estimated 32,000 members in 48 affiliated organizations.

### **DGMP – [www.dgmp.de](http://www.dgmp.de)**

The German Society for Medical Physics (DGMP) was founded 1969 and represents about 1,200 members working in science, industry

and hospitals. Several regional sections of the Society have been established in recent years to improve communication channels among medical physicists in Germany and to support educational measures.

### **DGBMT – [www.dgbmt.de](http://www.dgbmt.de)**

German scientists in the field of biomedical engineering are organized in the DGBMT, which was founded in 1972. The Society merged with the VDE in 2001 and now has over 1,600 members including physicians, engineers, scientists and companies.

### **VDE – [www.vde.com](http://www.vde.com)**

The VDE Association for Electrical, Electronic & Information Technologies currently has over 34,000 members, including a broad spectrum of engineers, scientists and technicians, some 5,000 students and some 1,250 corporate and institutional members.

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