

# HELMHOLTZ SYMPOSIUM AACHEN 2015

May 29th, 2015

RWTH Aachen University Hospital  
Pauwelsstrasse 30, Aachen, Germany

Invited Lectures and Poster Presentations  
on Biomedical Engineering and Related Fields:

Stem Cells      Medical Robotics      Molecular Imaging  
Biomaterials      Medical Shockwaves  
Organ Support Systems      Medical Image Processing      Sensors  
**Personalized Biomedical Engineering**  
Automation in Medicine      Personal Health Care      Nanomedicines  
Human Technology Interaction      Biomechanics  
Cardiovascular Engineering      Computer Assisted Surgery  
Biohybrid Medical Systems      Risk Management

## CALL FOR POSTERS:

PDF-Versions (max. 1 Mbyte) of camera ready posters on related work can be submitted by authors affiliated to RWTH institutions to: [bme2015@hia.rwth-aachen.de](mailto:bme2015@hia.rwth-aachen.de)

Poster submission deadline: April 10<sup>th</sup> 2015

Notification to authors: April 24<sup>th</sup> 2015

Meeting registration deadline: April 30<sup>th</sup> 2015

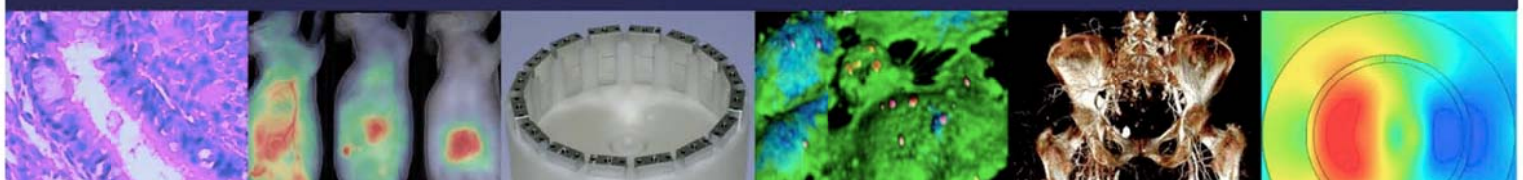
Registration via: [www.hia.rwth-aachen.de](http://www.hia.rwth-aachen.de)

Registration fee: 25,- Euro

### Program Chairs:

Lothar Elling, PhD, Willi Jahnen-Dechent, PhD, Fabian Kießling, MD, Steffen Leonhardt, MD, PhD, Klaus Radermacher, PhD, Thomas Schmitz-Rode, MD, Martin Zenke, PhD  
Helmholtz Institute for Biomedical Engineering, RWTH Aachen University

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# HELMHOLTZ-SYMPIOSIUM AACHEN 2015

## ON BIOMEDICAL ENGINEERING AND RELATED FIELDS

May 29th, 2015

### Location:

RWTH Aachen University Hospital, Pauwelsstrasse 30, Aachen, Germany

- **All lectures:** Lecture Hall 4 (Session I-VII)

- **Poster Exhibition Area, Coffee Breaks, Lunch Break & Get Together:**

Seminar Room (Ground Floor / Corridor D/46 / Room 04).

## FINAL PROGRAM

**8:30-9:00 On-site Registration and Welcome**

**9:00-10:00 Session I: Biomaterials**

**(Chair: Prof. Dr. rer. nat. Lothar Elling, Biomaterials Laboratory, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University FB1)**

- Prof. Dr. Rüdiger Horstkorte, Institute for Physiological Chemistry, Martin-Luther-University Halle-Wittenberg: "Sialic Acid Metabolic Engineering: A Potential Strategy for Cancer Therapy"
- Dr. Alexander Kühne, DWI – Leibniz-Institut für Interaktive Materialien e.V.: "Fluorescent colloids for bioinspired photonics and biomedical imaging"
- Ruben R. Rosencrantz, M.Sc. Biology and M.Sc. Chemistry, Laboratory for Biomaterials, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University: "Brushes, spheres and particles - Multivalent glyco-biomaterials and their applications"

**10:00-11:00 Session II: Technical Innovations in Medical Engineering 1**

**(Chair: Prof. Dr. Ing. Dr. med. Steffen Leonhardt, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University, Chair of Medical Information Technology, FB6)**

- Sybo Dijkstra, Senior Director Philips Research UK, 101 Cambridge Science Park, Milton Road, Cambridge CB4 0FY, UK: "Chronic Condition Management: an overview of different research angles to the challenge"
- Prof. Dr. med. Hans-Christoph Pape, Klinik für Unfall- und Wiederherstellungs-chirurgie, UK Aachen: "Gerontotraumatology"
- Dr.-Ing. Marian Walter, Philips Chair for Medical Information Technology, RWTH Aachen University: "Closed-Loop Control of Extracorporeal Circulation"

**11:00-11:30 Coffee Break &**

**Poster Exhibition "Biomedical Engineering @ RWTH Aachen University"**

**11.30-12.30**      **Session III Imaging: Understand Biology, Individualize Therapy**  
**(Chair: Prof. Dr. med. Fabian Kiessling, Chair of Experimental Molecular Imaging, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University, FB10)**

- Prof. Dr. Bernd Pichler Chair of the Department of Preclinical Imaging and Radiopharmacy, Clinic of Radiology of the Eberhard-Karls-Universität Tübingen: "Advanced applications of PET-MRI"
- Prof. Dr. Ing. Volkmar Schulz (ExMI/PMI, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University: "PET-MRI and MPI instrumentation"
- Prof. Dr. Felix Mottaghy (Department of Nuclear Medicine, University Hospital Aachen): "New Radiotracers for molecular medicine"

**12.30-13:30**      **Session IV Biomedical applications of nanoparticles**  
**(Chair: Prof. Dr. Thomas Schmitz-Rode, Helmholtz Institute for Biomedical Engineering, RWTH Aachen University, Chair of Applied Medical Engineering, FB10)**

- Ulrich Simon, Professor and Chair of Inorganic Chemistry and Electrochemistry, Institute of Inorganic Chemistry, RWTH Aachen University: „ Synthesis and biofunctionalization of metal nanoparticles. “
- Lutz Trahms, Director and Professor, Dept. of Biosignals, Physikalisch-Technische Bundesanstalt, Berlin: "How magnetic measurements support biomedical applications of magnetic nanoparticles"
- Ioana Slabu, Dept. of Biophysical & Education Engineering, Institute of Applied Medical Engineering, Helmholtz Institute for Biomedical Engineering, RWTH Aachen University, and Dept. of Biosignals, Physikalisch-Technische Bundesanstalt, Berlin: „Biomedical applications of magnetic nanoparticles in diagnostics and therapy”

**13:30-14:30**      **Lunch Break &**  
**Poster Exhibition “Biomedical Engineering @ RWTH Aachen University”**

**14.30-15:30**      **Session V: Biointerface Science**  
**(Chair: Prof. Dr. rer. nat. Willi Jahnen-Dechent, Helmholtz-Institute for Biomedical Engineering - Biointerface Laboratory, RWTH Aachen University, FB10)**

- Dr. rer. nat. Marietta Herrmann, AO Foundation Davos, Schweiz: "Tissue Engineering of Vascularized Bone Implants"
- Univ.-Prof. Dr. rer. nat. Andrij Pich, DWI - Leibnitz-Institut für Interaktive Materialien: "Polymer Nanogels for Functionalisation of Biointerfaces"
- Univ.-Prof. Dr. rer. nat. Willi Jahnen-Dechent, Helmholtz-Institute for Biomedical Engineering - Biointerface Laboratory, RWTH Aachen University, FB10: "Mud in the Blood?"

**15:30-16:00**      **Coffee Break &**  
**Poster Exhibition “Biomedical Engineering @ RWTH Aachen University”**

**16.00-17.00      Session VI: Challenges and Perspectives in Medical Engineering**  
**(Chair: Prof. Dr.-Ing. Klaus Radermacher, Chair of Medical Engineering, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University FB4)**

- Dr. Wolfgang Lauer, Head of Research Group Safety of Medical Devices, Federal Institute for Drugs and Medical Devices (BfArM), Bonn: “Medical Device Safety - Challenges and Perspectives”
- Univ.-Prof. Dr.-Ing. Dorit Merhof, Institute of Imaging & Computer Vision, RWTH Aachen University: “Cancer diagnostics by computer-assisted analysis of cell images”
- Armin Janss, Dipl.-Ing. , Chair of Medical Engineering, Helmholtz Institute for Biomedical Engineering, RWTH Aachen University, FB4: “OR.NET – Approval of Medical Devices for Plug&Play Operating Room Systems – Challenges and Approaches”

**17:00-18:00      Session VII: Stem Cells and Mechanobiology**  
**(Chair: Prof. Dr. Martin Zenke, Chair of Cell Biology, Helmholtz Institute for Biomedical Engineering, RWTH Aachen University FB10):**

- Prof. Dr. Dr. Wolfgang Wagner, Stem Cell Biology and Cellular Engineering, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University: “Induced pluripotent stem cells”
- Joana Frobels, M.Sc., Stem Cell Biology and Cellular Engineering, Helmholtz-Institute for Biomedical Engineering, RWTH Aachen University: “A journey to pluripotency and back again: generation of MSC from MSC-derived iPS cells”
- Prof. Dr. Rudolf Merkel, Institute of Complex Systems 7: Biomechanics, Research Center Jülich: “Mechanobiology”

**18:00-21.00      Get Together & Chill Out (incl. Drinks, Snacks & Live Music) - in the Poster Exhibition Area**

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**Program Chairs:**

Lothar Elling, Willi Jahnen-Dechent, Fabian Kießling, Steffen Leonhardt, Klaus Radermacher, Thomas Schmitz-Rode, Martin Zenke

Helmholtz Institute for Biomedical Engineering , RWTH Aachen University