

RWTH Aachen University

RWTH



**RWTHAACHEN
UNIVERSITY**

founded in 1870

Key Figures WT 07/08

RWTH



30260 students



5169 international students



400 professorships



558 Mill. EUR budget

154 Mill. EUR external funding



260 institutes



2000 non-academic staff



2000 academic staff

Faculties and Departments



FB 1: Faculty of Mathematics, Computer Sciences & Natural Sciences

Dept.: Mathematics
Dept.: Computer Science
Dept.: Physics
Dept.: Chemistry
Dept.: Biology

FB 2: Faculty of Architecture

FB 3: Faculty of Civil Engineering

FB 4: Faculty of Mechanical Engineering

FB 5: Faculty of Georesources & Materials Engineering

Dept.: Mining & Waste Management
Dept.: Metallurgy
Dept.: Geoscience

FB 6: Faculty of Electrical Engineering & Information Technology

FB 7: Faculty of Arts

FB 8: Faculty of Business & Economics

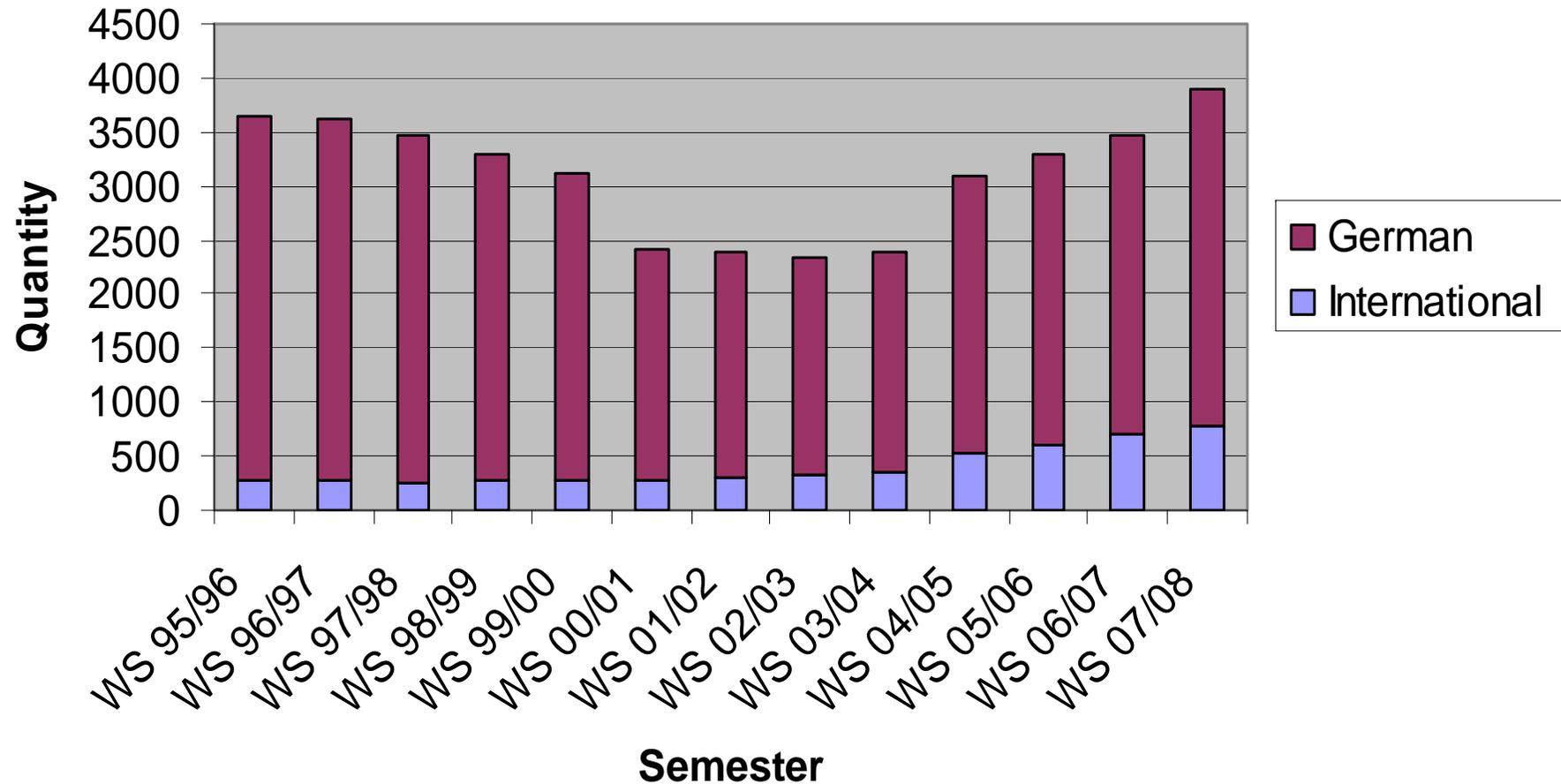
FB 10: Faculty of Medicine

**Engineering
technology**

PhD Number of Students at RWTH



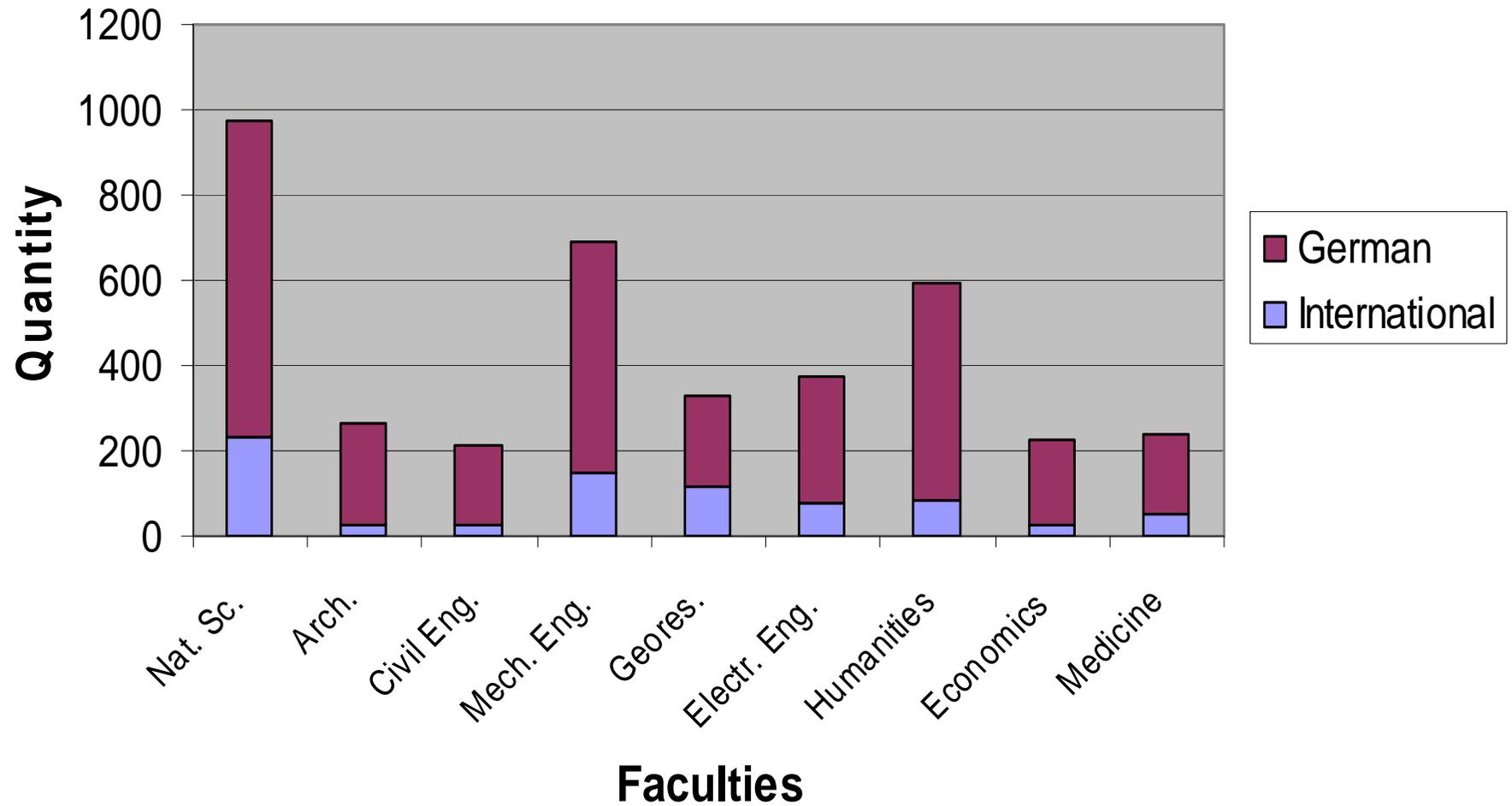
German and International PhD Students



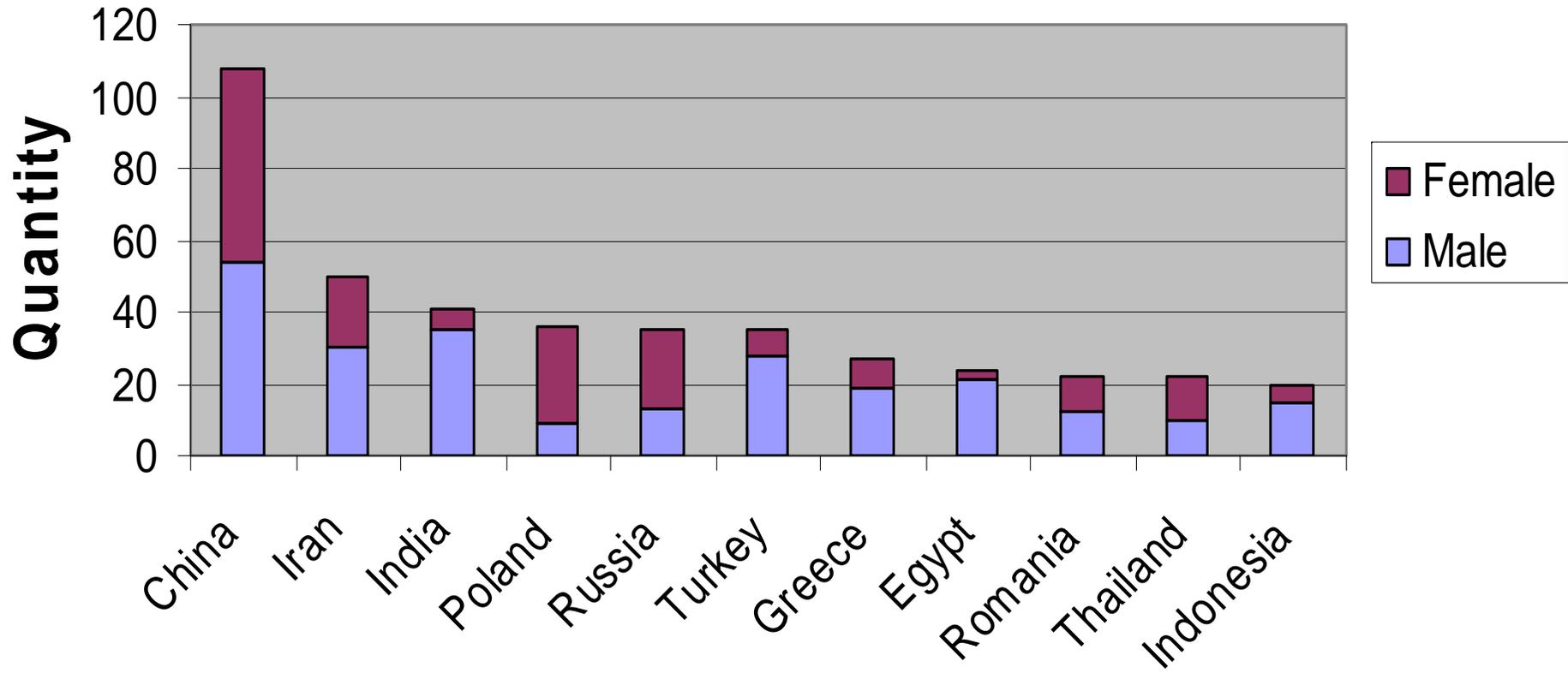
Number of PhD Students by Faculties



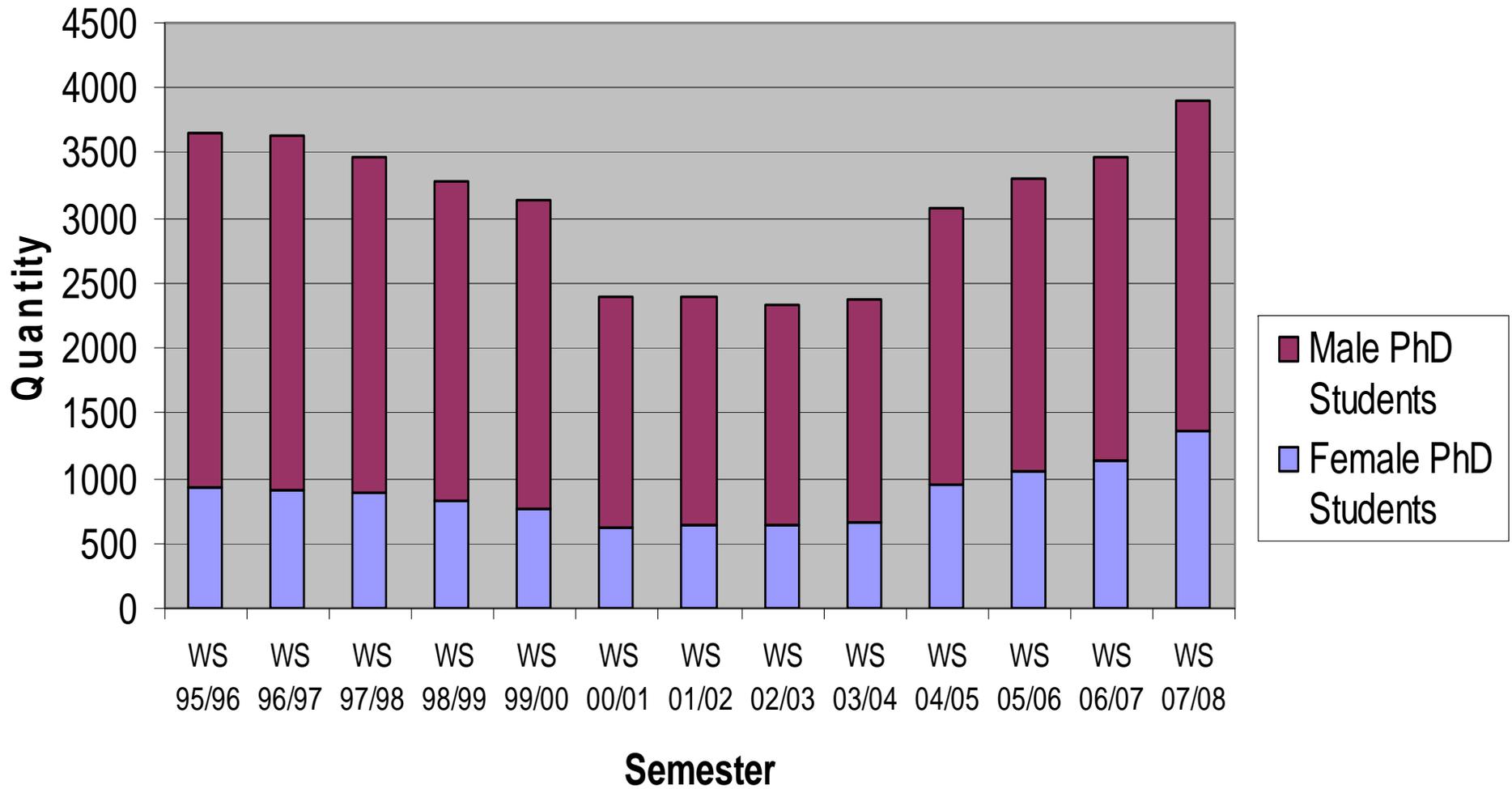
International and German PhD Students



International PhD Students WS 06/07 (>20 per Country)



Male and Female PhD Students



PhD in Science/Engineering



- **topping-up qualification for highly qualified researchers and industrial managers**
- **research in co-operation with a scientific supervisor (*Doktorvater*) - no PhD programme**
- **candidates are often employed at the university (or in industry)**
- **scientific results worked up to a doctoral thesis (*Dissertation*)**
- **duration: 3 to 5 years**
- **no tuition fees for PhD students**

- Acquisition of **key qualifications** and inter-disciplinary, intercultural and communication skills

- **Doctorate Supplement** as evidence for knowledge and soft skills acquired alongside the doctoral thesis

Optimization of the qualification of doctoral candidates by ...

Vice-Rector for Structure, Research and Junior Academic Staff

Steering Committee

RWTH CENTER FOR DOCTORAL STUDIES

CDS Office

Faculties /
Academic Supervisors

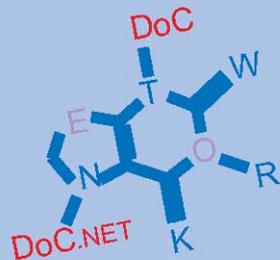
Doctoral
Candidates



Informal Network for Doctoral Students

- for **German and International** doctoral students
- in cooperation with the **International Office** and the **Center for Doctoral Studies**
- exchange beyond cultural and disciplinary boundaries

Contact via the International Office



Contact:

Dr. Ulrike Brands-Proharam Gonzalez
ulrike.brands@zhv.rwth-aachen.de

Doc.net - Programme

RWTH

- non-technical mentoring of international doctoral candidates
- supported by the German Academic Exchange Service (DAAD)

Offerings are...

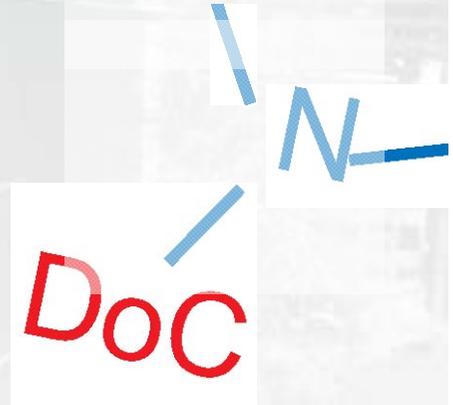
- **Language qualification in German**

- **Workshops in English**

- **Teaching Assistantships**

- **informal network for doctoral students**

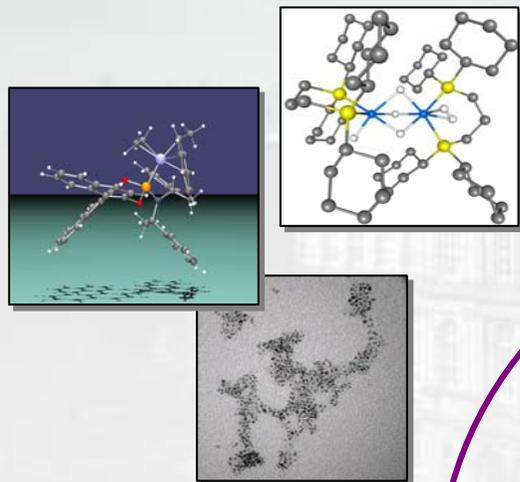
- **RWTH Leisure & Pleasure**



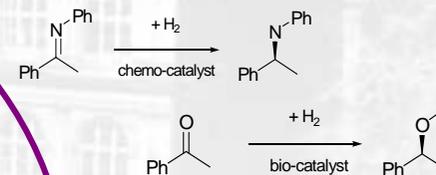
Faculty of Mathematics, Computer Science and Natural Sciences

6040 Students

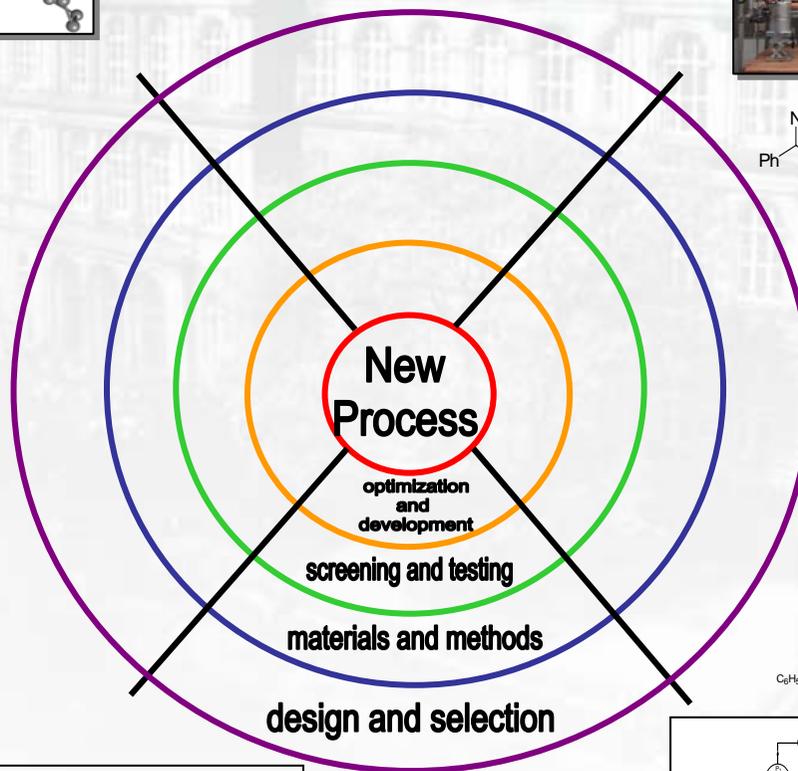
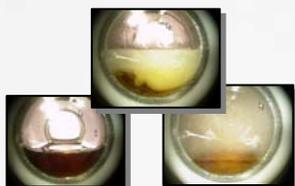
4 examples



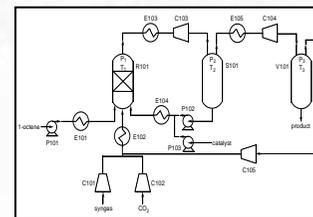
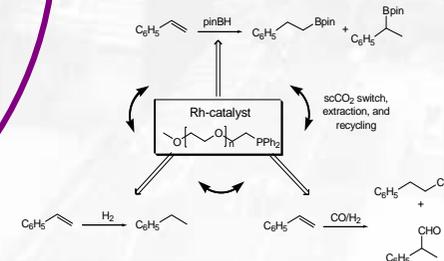
Alternative Solvents



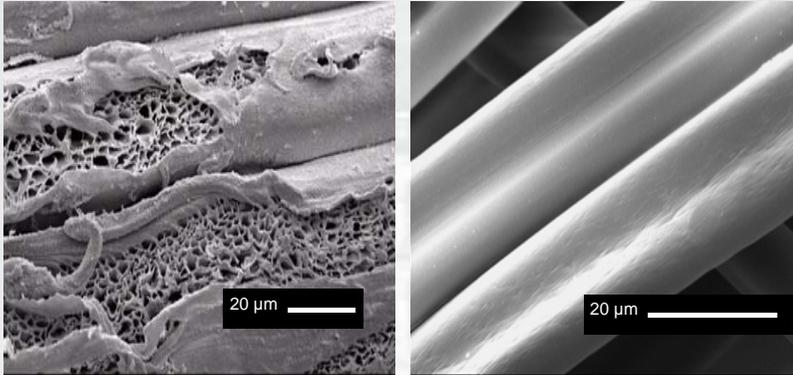
Catalysis



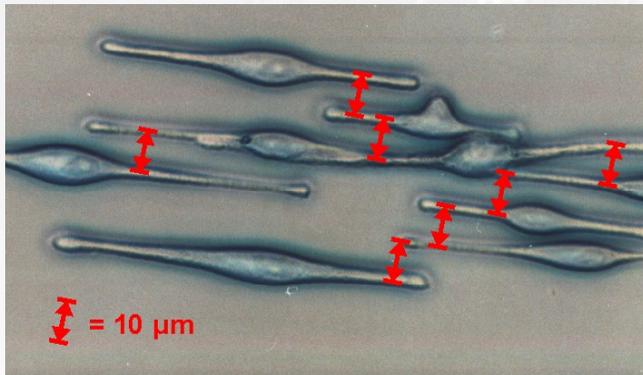
Green Chemistry



Prof. W. Leitner
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Surface modification of fibres for protection against chemicals



Directed growth of melanocytes on a functionalized hydrogel surface

- Multifunctional / Multireactive Oligomers and Polymers for Surface Modification
- Functional Assembly of Supra- and Macromolecules at Interfaces
- Micro-/Nanoparticles and Hybrid Materials
- Surface Activation and Functionalization
- Biomaterials, Nano- and Microstructures at Biointerfaces

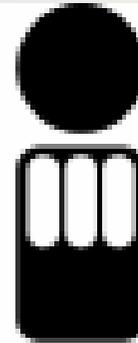
Prof. Martin Möller

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**Lehrstuhl für
Informatik 3**

**Department of
Computer Science 3**



Application
Areas in
Engineering
and
Informatics

Programming
Languages
and Software
Engineering

Software
Architecture
Modelling

Software
Tools and
Meta
Environment

Prof. Nagl

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Prof. Joost-Pieter Katoen
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info2sek@i2.informatik.rwth-aachen.de

<p>[BITS] $\frac{B \xrightarrow{B} z}{\langle [B], \omega \rangle \xrightarrow{E} \langle z, \omega \rangle}$</p> <p>[PLUS₁] $\frac{\langle E_0, \omega \rangle \xrightarrow{E} \langle E'_0, \omega' \rangle}{\langle E_0 + E_1, \omega \rangle \xrightarrow{E} \langle E'_0 + E_1, \omega' \rangle}$</p> <p>[PLUS₂] $\frac{\langle E_1, \omega \rangle \xrightarrow{E} \langle E'_1, \omega' \rangle}{\langle z_0 + E_1, \omega \rangle \xrightarrow{E} \langle z_0 + E'_1, \omega' \rangle}$</p> <p>[PLUS₃] $\frac{}{\langle z_0 + z_1, \omega \rangle \xrightarrow{E} \langle z_0 + z_1, \omega \rangle}$</p>	<p>[OUT₁] $\frac{\langle E, \omega \rangle \xrightarrow{E} \langle E', \omega' \rangle}{\langle \text{out } E, \omega \rangle \xrightarrow{E} \langle \text{out } E', \omega' \rangle}$</p> <p>[OUT₂] $\frac{}{\langle \text{out } z, \omega \rangle \xrightarrow{E} \langle z, z :: \omega \rangle}$</p> <p>[SEQ₁] $\frac{\langle E_0, \omega \rangle \xrightarrow{E} \langle E'_0, \omega' \rangle}{\langle (E_0, E_1), \omega \rangle \xrightarrow{E} \langle (E'_0, E_1), \omega' \rangle}$</p> <p>[SEQ₂] $\frac{}{\langle (z, E_1), \omega \rangle \xrightarrow{E} \langle E_1, \omega \rangle}$</p>
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Concurrent Systems

Semantics

Model Checking

Faculty of Architecture

1614 students

An example

Institute for Computer Aided Architectural Design



Building Information Modelling
Collaborative Design Platforms
Intelligent Building Systems

**Professor Architekt
Peter Russell M.**

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Faculty of Civil Engineering

1095 students

An example

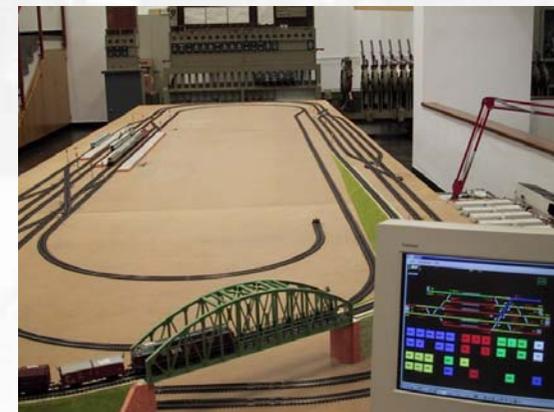
Prof. Wendler
Prof. Reichmuth
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Dept.
Railway
operations
Research



Dept.
Transport
Economics

Dept.
Railway
Signalling



Dept.
Airport design
and air traffic



Train protection
demonstrator

Education in the
railway signalling lab

Faculty of Mechanical Engineering

6733 students

4 examples



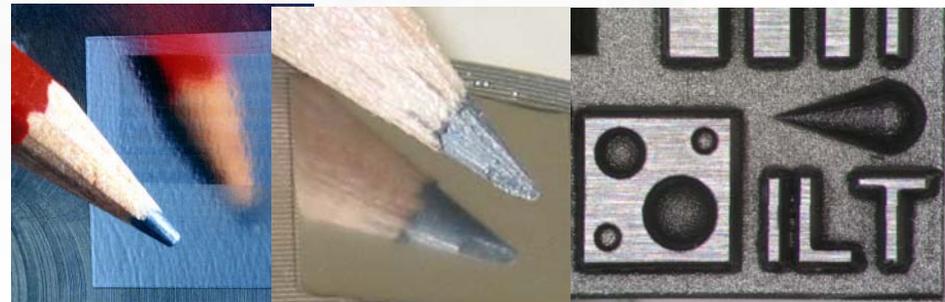
Research Topics

- Solid State and Diode Laser Development
- Ultrafast high power Lasers
- Laser applications in production, Life Science/ Medical, Measurement

Prof. Reinhart Poprawe

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poprawe@ilt.fhg.de



Professor Wolfgang Marquardt

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Research activities

- Model-based process control
- Model-based experimental analysis
- Process synthesis



Research Topics

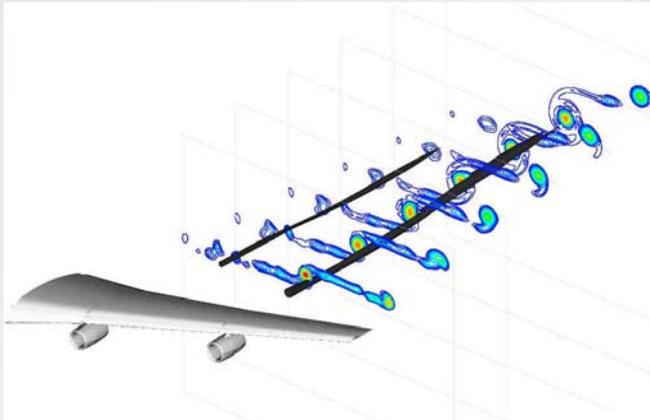
- Active and Passive Safety
- Energy Efficiency
- Vehicle Dynamics/Driving Pleasure

Prof. Stefan Gies

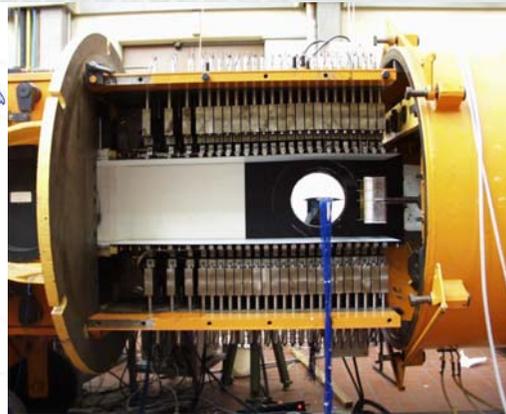
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office@ika.rwth-aachen.de

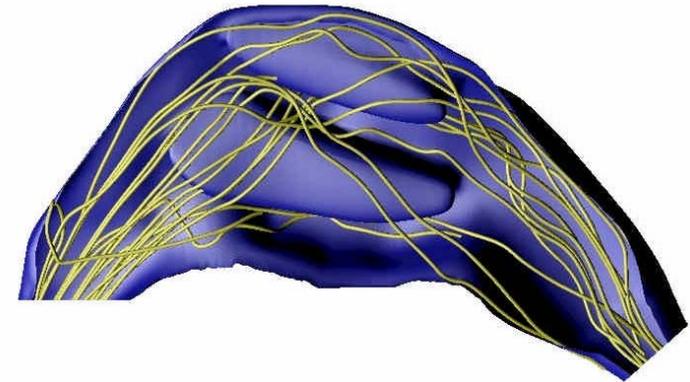




*Jet-vortex
interaction in the
wake of an airplane
wing*



*Test section with
adaptive walls of
the trisonic wind
tunnel*



*CFD determined
streamlines through a
model of the human
nose during
inhalation.*

Prof. Wolfgang Schröder

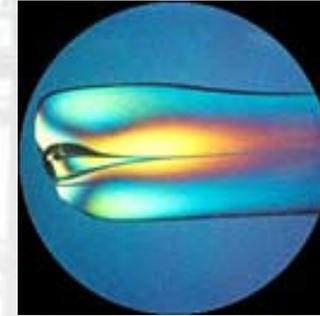
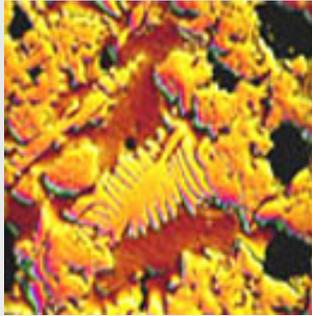
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Faculty of Georesources and Materials Engineering

2754 students

3 examples



Prof. Heike Emmerich

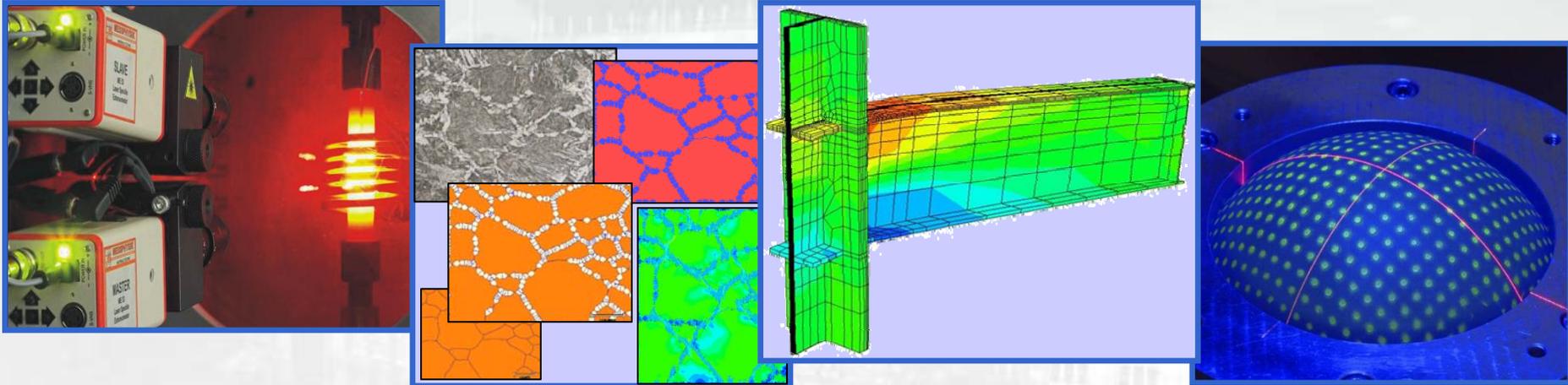
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Microstructure Simulation

Multiscale Simulation

Process Optimization



The focus of the **Materials Processing** group lies on the investigation of processes and properties of the solid state at medium to high temperatures.

The focus of the **Advanced Materials Simulation** group is the numerical modeling of microstructures and properties.

The **Materials Mechanics** group investigates the structural integrity.

The activities of the **Materials Characterization** group cover the description of material properties, the determination of forming, crash and corrosion-behaviour, and the development of new measuring techniques.

Prof. Wolfgang Bleck
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Prof. Günter Gottstein

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- Interfaces
- Crystall Plasticity
 - Texture
 - Simulation
- Nano Structures
- Poster IMM

Faculty of Electrical Engineering and Information Technology

2756 students

3 examples



Digital factory



Geo Data



Space robotics

Prof. Jürgen Rossmann

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Asset
Management
and Regulation



Power
Generation and
Trading



Power
Quality

Electricity and
Natural Gas
Networks

Prof. Hans-Jürgen Haubrich

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Prof. Armin Schnettler
and the

Institute for High Voltage Technology
invite you to join one of the following research groups:

Insulation Systems and Diagnosis

Sustainable Power Systems

Faculty of Business and Economics

1818 students

An example



Prof. Kai Reimers

Recker@wi.rwth-aachen.de

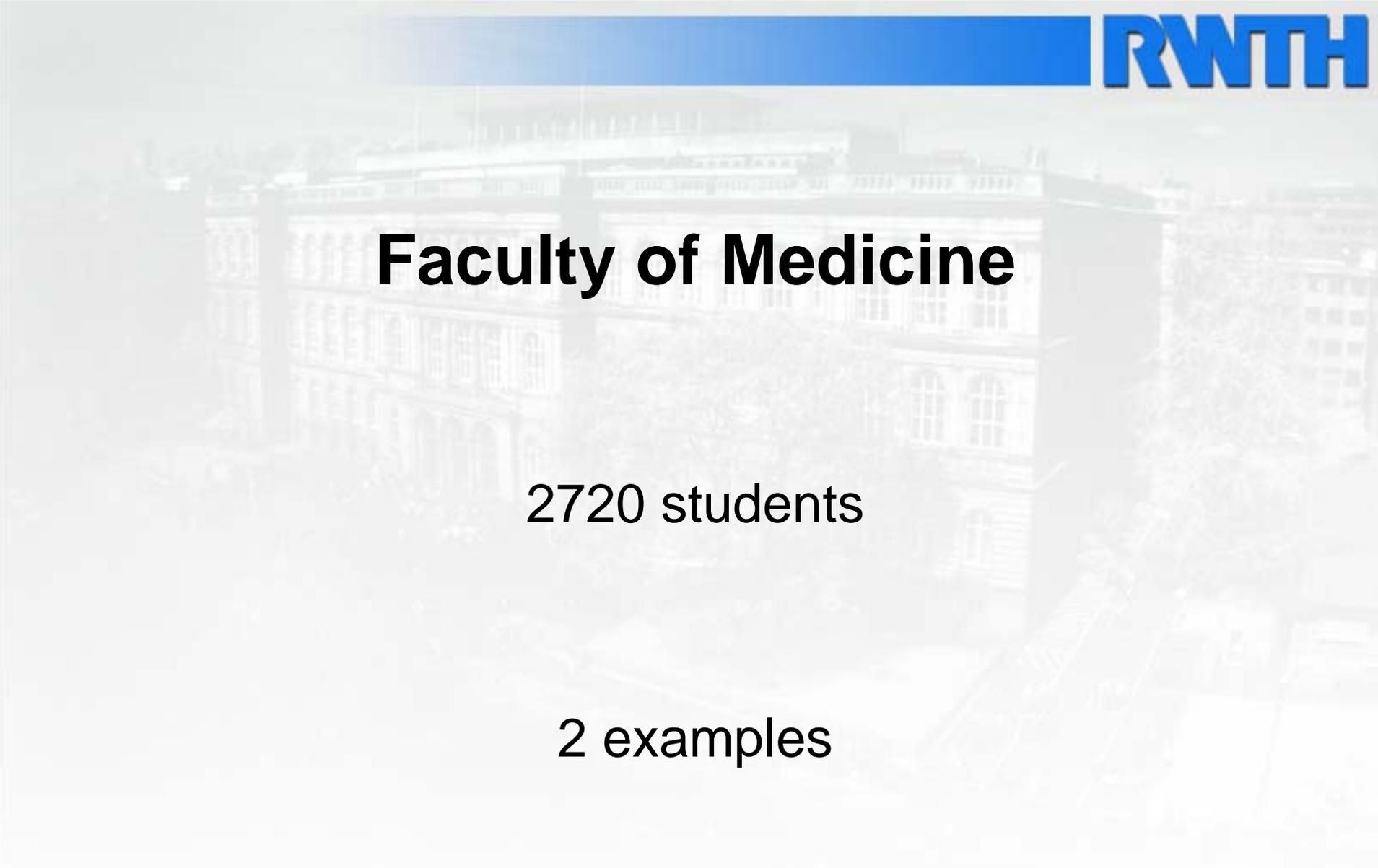
www.wi.rwth-aachen.de

Interorganisational information systems,
their structure and evolution as seen from
an institutional perspective

Implementation of large-scale information
systems (ERP systems) in international
companies

Development of IT standards (IT
standardisation)



The background of the slide is a faded, grayscale aerial photograph of the RWTH Aachen University campus, showing several large, multi-story buildings with many windows and some trees in the foreground.

Faculty of Medicine

2720 students

2 examples



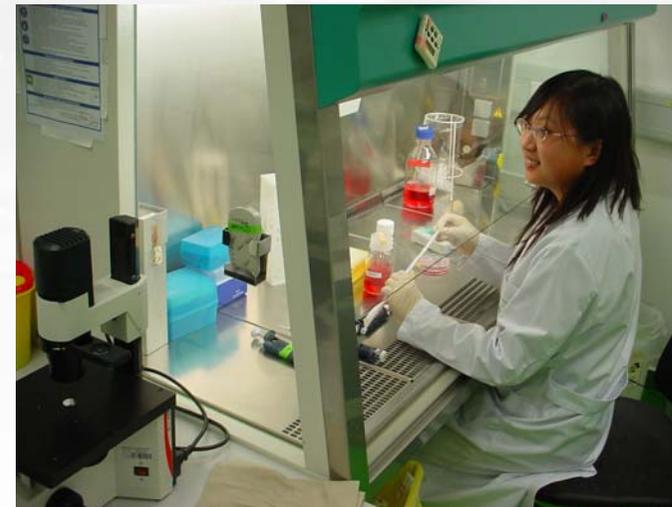
Prof. Martin Zenke

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martin.zenke@rwth-aachen.de

Research fields

- Programming and reprogramming of stem cells
- Biomaterials und cells in biohybrid systems
- Nanoparticles for monitoring cell position and function

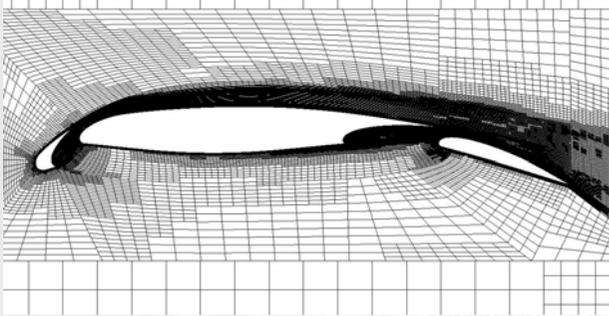


AICES

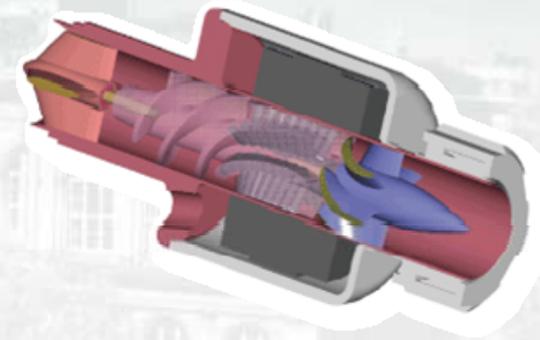
The graduate school



AICES- The graduate school



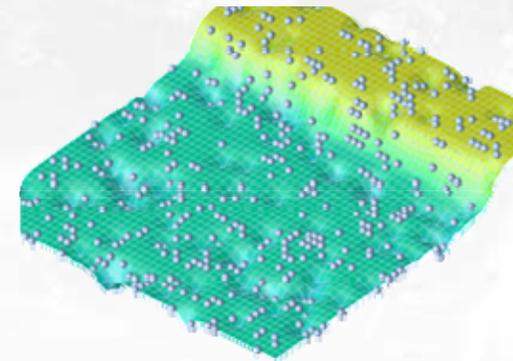
**Department of
Mathematics**



**Faculty of Mechanical
Engineering**



**Department of Computer
Science**



**Faculty of
Georesources and
Material Engineering**

AICES- The graduate school



Scientific Director

Prof. Marek Behr

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Managing Director

Dr. Nicole Faber

faber@aices.rwth-aachen.de

AICES is spearheaded by 15 RWTH institutes from 4 departments, and it includes participation from the Research Centre Jülich and the Max Planck Institute for Iron Research in Düsseldorf.

www.aices.rwth-aachen.de