



Energy Harvesting

Prof. Dr. Volker M. Koch

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Master of Science in Biomedical Engineering

- Master's program at the University of Bern
In cooperation with the Bern University of Applied Sciences



Prof. Dr.-Ing. Lutz-P. Nolte
Program Director



Prof. Dr. Volker M. Koch
Deputy Program Director

- Bachelor's degree from a Swiss UAS sufficient; Ph.D. possible
- Almost all courses are given in English

Program Director
» Nolte Prof. Dr.-Ing., Lutz-P.
Deputy Director
» Koch Prof. Dr., Volker M.
Study Coordination
» Jakob-Burger, Ulla
» Neuschwander, Alexandra
» Spyra, Julia
Faculty (A - F)
» Acikgöz Ersoy Dr., Bernur
» Albrecht Prof. Dr., Christiane
» Altmann Dr., Martin
» Andres Prof. Dr., Anne-Catherine
» Baum PD Dr., Oliver
» Büchler Dr., Philippe
» Bunke Prof. Dr., Horst
» Burger PD Dr., Jürgen
» Busato Prof. Dr., André
» Cattin Prof. Dr., Philippe
» Caversaccio Prof. Dr., Marco-Domenico
» Czerwinska Prof. Dr.-Ing., Justyna
» Daniels Prof. Dr., Dan
» Debrunner Prof., Daniel
» Delfosse Dr. sc. techn., Daniel
» Egger PD Dr., Marcel
» Erdmann, Raimund
» Ferguson PD Dr., Stephen
» Frouzi Prof. Dr., Elham
» Frenz Prof. Dr., Martin

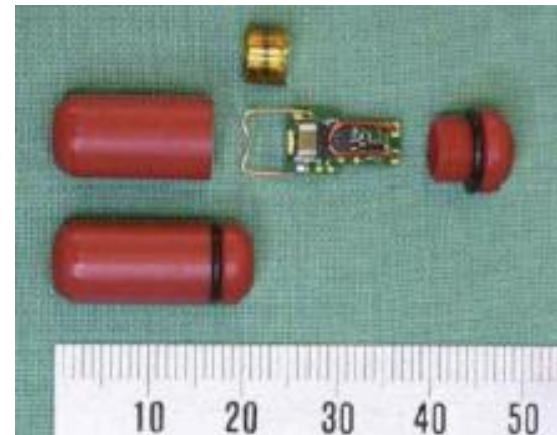
Faculty (G - M)
» Gantenbein Prof. Dr., Benjamin
» Geiser Kamber Prof. Dr., Marianne
» Götte Prof. Dr., Josef
» Hedbom Dr., Erik
» Hofer Dr., Ulrich
» Hofstetter Prof. Dr., Wilhelm
» Hoppeler Prof. Dr., Hans-Meinrich
» Hüsler Prof. Dr., Jürg
» Jacomet Prof. Dr., Marcel
» Jensen Dr., Björn
» Keppner Prof. Dr., Herbert
» Koch Prof. Dr., Volker
» Kompis Prof. Dr., Martin
» Kowal Prof. Dr., Jens
» Kucera PD Dr., Jan
» Lechmann, Beat
» Lüscher Prof. Dr., Hans-Rudolf
» Mack Dr., Alexander
» Moser Dr., Walter
» Mougkakakou Prof. Dr., Stavroula
» Müller Prof. Dr., Bert
» Mussard Prof., Yves
Faculty (N - Z)
» Nestic PD Dr., Dobrila
» Nef Prof. Dr., Tobias
» Neviau Prof. Dr., Thomas
» Niggli Prof. Dr., Ernst
» Nolte Prof. Dr., Lutz-Peter
» Reyes Dr., Mauricio
» Scheffler Prof. Dr., Klaus
» Schittny Prof. Dr., Johannes
» Schwieger Dr., Karsten
» Senn Prof. Dr., Walter Martin
» Stahel Prof. Dr., Andreas
» Sterchi Prof. Dr., Erwin
» Stieger Prof. Dr., Christof
» Stoyanov Dr., Jivko
» Streit Prof. Dr., Jürg
» Tschanz Dr., Stefan
» Vandenberghe Prof. Dr., Stijn
» Vetter Prof. Dr., Thomas
» Vogel Prof. Dr., Rolf
» Weber Prof. Dr.-Ing., Stefan
» Zeilhofer, Prof. Dr. Dr., Hans-Florian
» Zheng Dr., Guoyan
» Zwicker Prof. Dr., Matthias

Master of Science in Biomedical Engineering

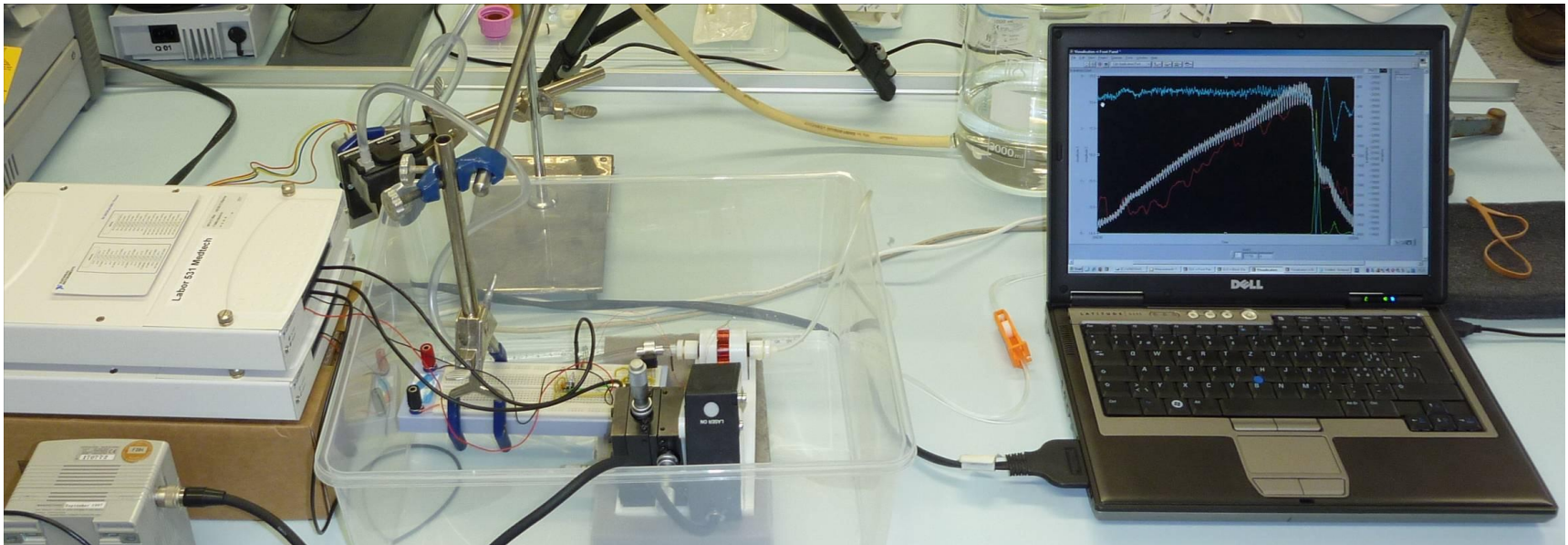
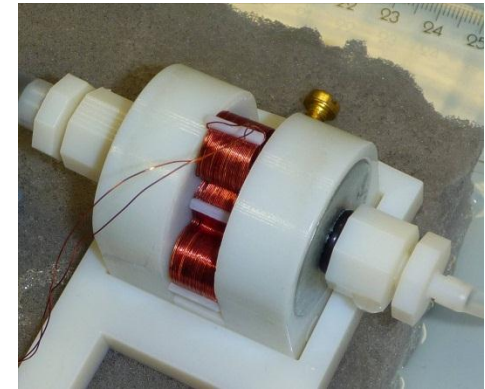
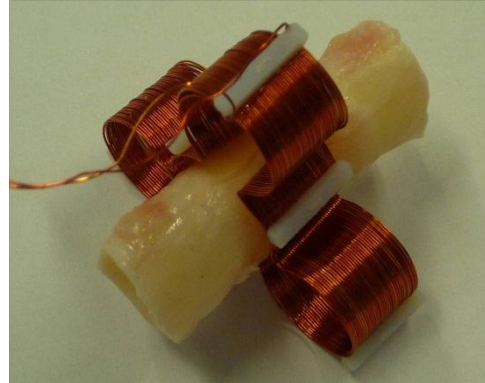
- Newly enrolled students: 21 (2006), 38 (2007), 41(2008), 67(2009), 87 (2010)
- Students graduated both from traditional basic research-oriented universities as well as from universities of applied sciences
- Various academic backgrounds: Electrical Engineering, Microtechnology, Mechanical Engineering, Computer Science, Medical Informatics, Cell Biology, Medicine, ...
- Various cultural backgrounds: Switzerland, Germany, India, China, Iran, Turkey, Italy, Greece, Nigeria, France, Iceland, Senegal, Ghana, Norway, Lebanon, Serbia, Togo, Syria, Brazil, Colombia, Nepal, Spain, Pakistan, Ethiopia, Mexico etc.

Master of Science in Biomedical Engineering

- It is an engineering program!
- Three majors:
 - Musculoskeletal System
 - Image Guided Therapy
 - Electronic Implants



Energy Harvesting



Cooperation

- Research cooperation between the University of Bern and the Bern University of Applied Sciences
- We also work together with industrial partners. Possibilities are:
 - Semester and bachelor's projects
 - Master's projects
 - PhD projects
 - CTI projects
 - Consulting
 - ...
- Events: www.biomedeng.org/events.html



What Fascinates Me?

“Making the deaf hear and the blind see – those are not unrealistic dreams. Biomedical engineering has fascinated me since my youth. Where else is it possible to increase the quality of a person’s life so directly and fundamentally?”

Program

Morning session's host

Prof. Dr. Volker M. Koch, BFH-TI, Biel (CH)

09.15 Welcome Messages

09.30 Challenges of Energy Harvesting

Dr. Rob van Schaijk, Program manager Micropower,
IMEC, Eindhoven (NL)

10.00 Energy Harvesting Needs in the Medical Field

Prof. Dr. Rolf Vogel, Inselspital, Bern (CH)

10.30 Coffee & Exhibition

11.00 Energy Harvesting in Consumer Goods

Dr. Michel Willemin, The Swatch Group R&D SA, Biel (CH)

11.30 Energy Harvesting in the Automotive Field

Prof. Kurt Hug, BFH-TI, Biel (CH)

12.00 Lunch & Exhibition

Afternoon session's host

Philippe Fischer, sensors.ch, Neuchâtel (CH)

13.30 Overview of Harvesting Techniques

Prof. Dr. Peter Woias, IMTEK, Freiburg (DE)

14.30 Nanotechnology for Thermogenerators

Dr. Laurent Gravier, HEIG-VD, Yverdon les Bains (CH)

14.50 Passive and Intelligent RFID Tag for Sensors

Prof. Dr. Marcel Meli, ZHAW, Winterthur (CH)

15.10 Coffee & Exhibition

15.40 Solar Energy for Sensor Nodes

Dr. Philippe Dallemagne, CSEM, Neuchâtel (CH)

16.00 Piezoelectric MEMS Based Energy Harvesters

Dr. Danick Briand, EPFL, Lausanne (CH)

16.20 Commercial Thermo Generator

Dr. Wulf Glatz, greenTEG, Zürich (CH)

16.40 Final Discussion

17.00 Apéro & Exhibition

Morning Session's Speakers



Dr. Rob van Schaijk

Prof. Dr. Dr. Rolf Vogel

Dr. Michel Willemin

Prof. Kurt Hug

Dr. Rob van Schaijk

- Senior Scientist at Philips Research; 1999 — February 2006
- Principal Engineer at NXP/Innovation Nijmegen; 2006 — 2007
- Principal Researcher at Holst Centre/IMEC-NL; 2007 — Present
- Program Manager Micropower at IMEC, Eindhoven (NL)
- **IMEC** (Interuniversity Microelectronics Centre) is a micro- and nanoelectronics research center in Belgium. IMEC focuses on next generation electronics research, three to ten years ahead of industrial needs. The organization employs approximately 1,700 people.
- **Holst Centre** is a research center with the mission to create generic technologies and enhance the innovative power in the fields of Wireless Autonomous Transducer Solutions and Systems-in-Foil. Holst Centre is located on the High Tech Campus in Eindhoven, the Netherlands.
- **Challenges of Energy Harvesting**

