

## CURRICULUM VITAE

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1969 - 1973	Basic primary school in Frankfurt/Main
1973 - 1979	Secondary school in Frankfurt/Main
Mai 1979	Secondary school level certification
1979 - 1982	Apprenticeship as a machine fitter in Darmstadt
1982 - 1985	comprehensive secondary school with higher education entrance qualification in Darmstadt
1985 - 1986	Military service Training and working as jet-mechanic
1986 - 1994	Study of physics at the Technical University in Darmstadt Priorities: Laser und plasma physics, optics, spectroscopy, vacuum techniques Diploma thesis: "Determination and interpretation of line widths of an Argon-Ion laser plasma in the red spectral range"
30.05.1994	Diploma examination as a "Physicist"
01.06.1994	Employment as scientist at the Institute of Lasermedicine, Heinrich-Heine-University Duesseldorf

Conferral of a doctorate 10.02.1998	Dissertation: "Liquid-core lightguides for high-power pulsed laser systems in the infrared spectral range" PhD examination as "Dr. rer. nat."
until 31.07.1999	Post-Doc at the Institute of Lasermedicine, Heinrich-Heine-University Duesseldorf
01.08.1999 until 31.12.1999	Employment as scientist for development and research at the Center of Advanced European Studies And Research, Bonn, in cooperation with the Institute of Lasermedicine, Duesseldorf
01.01.2000 until 31.08.2009	Employment as scientist for development in laser technology and fundamental research in laser medicine at the Department of Conservative Dentistry, Periodontology, and Preventive Dentistry, RWTH Aachen University
since 2003	Co-worker at the Aachen Dental Laser Center (AALZ)
since 01.09.2010	Employment as scientist for development in laser technology and basic research in laser dentistry at the Department of Periodontology, Conservative and Preventive Dentistry, Bonn University
14.06.2011	Venia legendi in the area of "Applied Medical Technology" at Medical Faculty of RWTH Aachen University
18.05.2012	Co-founder of the "Center of Applied Medical Laser Research and Biomedical Optics" (AMLaReBo)  Change of Venia legendi from Aachen University to Bonn University
26.04.2018	Venia legendi in the area of "Applied Medical Technology" at Medical Faculty of Bonn University
since 04.12.2019	Guest professorship at "Laser Application in Medical Sciences Research Center", Shahid Beheshi University, Tehran, Iran

FOCUS OF ACTIVITIES/WORK EXPERIENCE  
"BASIC RESEARCH AND DEVELOPMENT"

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Scientific employee at the Dental Faculty of the Rheinische Friedrich-Wilhelms-University Bonn, Germany

- Head of the working group "Lasers in dentistry"
- Technical director of the core facility "AMLaReBo" (Center of Applied Medical Laser Research and Biomedical Optics)
- Manager of different projects with public funding

Activities:

- Medical research project to investigate the removal of vitreous body using laser technology
- Basic investigations of comparability of different laser wavelengths soft tissue surgery
- Development of a Q-switched DPSS Er:YAG laser
- Basic investigations of indocyanine green as a photosensitizer for antimicrobial Photodynamic Therapy
- General research for the use of ultra-shortpulse lasers in dentistry, i.e., threshold measurements & ablation rates
- Consulting for medical companies

Scientific employee at the University Hospital of the RWTH Aachen, Germany

Activities:

- Leader of the research project on a miniaturized, diode-pumped, solid-state laser
- Research projects on ablation thresholds on hard tissue ablation
- General research about water-mediated hard tissue ablation with lasers
- Research project on under water ablation in minimal invasive orthopedic applications
- Consulting for medical companies

Scientific employee at the Heinrich-Heine-University in Duesseldorf, Germany

Activities:

- Leader of the laser handpiece development (optical design) for the dental laser system "Biolase Millennium"
- Spectroscopy of different light sources
- Development of liquid core lightguides for high power erbium lasers
- Research project on a FTIR Q-switch system for laser cavities
- Interdisciplinary research project on light transmission systems for monitoring acetone vapours in the breath of diabetes mellitus patients

FOCUS OF ACTIVITIES/WORK EXPERIENCE

"EDUCATION"

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Lecturer of the study course "Dental and Oral Diseases" with the lecture content "Lasers in Dentistry" at the Rheinische Friedrich-Wilhelms-University Bonn

Lecturer in the module III "Tools and Systems for Therapy – Laser" of the post graduate Master in "Medical Technology" of the Rheinische Friedrich-Wilhelms-University Bonn

Lecturer in the module "Lasers in Diagnosis" of the post graduate Master in "Lasers in Dentistry" of the RWTH Aachen International Academy

Lecturer in the modules I & II "Laser Safety and Dental Laser Systems" of the Mastership/Fellowship program "Lasers in Dentistry" of the RWTH Aachen International Academy

## FURTHER ACTIVITIES

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- since 2002      Reviewer for more than 60 listed, peer-reviewed national and international publications
- German journal of the DGL "LaserZahnheilkunde" of the Quintessenz publisher
  - "International Journal of Paediatric Dentistry", "Lasers in Surgery and Medicine" and "Journal of Biomedical Materials Research – Part B" of the Wiley publishing group
  - "Lasers in Medical Science", Lasers in Dental Science" and "Odontology" of the Springer publisher
  - "Applied Optics" and "Journal of Biomedical Optics" of the Optical Society of America
  - "Applied Surface Science" and "Journal of Dentistry" of the Elsevier publisher
  - "Nature" of the Macmillan Publishers Limited as part of the Springer publisher
- since 2001      Instructor's licence as laser safety officer (Priorities: laser safety, device technology, Applications on biological samples)
05. - 09. Okt. '92      German Society of Physics  
Training course II "Quantum Optics II"  
Bad Honnef

## MEMBERSHIPS

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Member of the German Society of Physics **DPG**

Member of the German Society for Laser Dentistry **DGL**

Member of the Scientific Board of the German Society for Laser Dentistry **DGL**

Member of the International Society for Laser Dentistry **ISLD**