

[Springer Handbook of Medical Technology](#)

Bearbeitet von
Rüdiger Kramme, Klaus-Peter Hoffmann, Robert Pozos

1. Auflage 2011. Buch. xcvi, 1497 S. Hardcover
ISBN 978 3 540 74657 7
Format (B x L): 19,3 x 24,2 cm

[Weitere Fachgebiete > Technik > Sonstige Technologien, Angewandte Technik > Medizintechnik](#)

schnell und portofrei erhältlich bei

The logo for beck-shop.de features the text 'beck-shop.de' in a bold, red, sans-serif font. Above the 'i' in 'shop' are three red dots of increasing size. Below the main text, 'DIE FACHBUCHHANDLUNG' is written in a smaller, red, all-caps, sans-serif font.

beck-shop.de
DIE FACHBUCHHANDLUNG

Die Online-Fachbuchhandlung [beck-shop.de](#) ist spezialisiert auf Fachbücher, insbesondere Recht, Steuern und Wirtschaft. Im Sortiment finden Sie alle Medien (Bücher, Zeitschriften, CDs, eBooks, etc.) aller Verlage. Ergänzt wird das Programm durch Services wie Neuerscheinungsdienst oder Zusammenstellungen von Büchern zu Sonderpreisen. Der Shop führt mehr als 8 Millionen Produkte.

About the Authors



Dino Accoto

Chapter D.42

Università Campus Bio-Medico di Roma
CIR – Center for Integrated Research
Rome, Italy
d.accoto@unicampus.it

Dino Accoto is an Assistant Professor in Industrial Bioengineering at the Università Campus Bio-Medico di Roma. He received the PhD in biomedical robotics from the Scuola Superiore Sant'Anna in 2002. Since 2004, he has been with the Laboratory of Biomedical Robotics and Biomicrosystems at Università Campus Bio-Medico di Roma. His main research interests are in wearable robotics, microengineering and biomechatronics.

Albert J. Augustin

Chapter B.13

Städtisches Klinikum Karlsruhe
Augenklinik
Karlsruhe, Germany
albertjaugustin@gmail.com



Albert J. Augustin is currently a Professor of Ophthalmology and Chairman of the Department of Ophthalmology at the Klinikum Karlsruhe, Germany. Prior to this, he was Professor of Ophthalmology at the University of Mainz where he was Head of the Laboratory for Pathophysiology of the Eye and Assistant Medical Director at Bonn University Eye Hospital. Dr. Augustin is the recipient of numerous awards and has published a number of books and over 140 papers. His main research activities relate to pathobiochemistry and pathophysiology of oxidative damage to the eye in age-related macular degeneration, diabetic retinopathy, proliferative vitreoretinopathy and retinal ischemia. He also established a combination therapy for wet AMD and initiated trials investigating the efficacy and safety of Triple Therapy.

Natasha Avila

Chapter F.67

e-medicis
Paris, France
natasha.avila@emedicis.com



Natasha Avila is the Founder and Managing Director of e-medicis. Prior to this she held positions at General Electric Healthcare where she was responsible for the European Operation Services of the IS product line around medical imaging and managed Lucent's professional services unit in France. She worked as a Consultant in the US, Germany and UK for the telecommunications and banking industry. She has a Master of Engineering from Cornell University and a MBA degree from Cambridge University. She is member of the French Society of Geriatrics.



Michael Bateman

Chapter D.43

University of Minnesota
Department of Biomedical Engineering
and Surgery
Minneapolis, MN, USA
batem034@umn.edu

Michael Bateman obtained his Masters degree in Mechanical Engineering from the University of Bristol, UK, in 2004. He went on to work for CG Versatile Fittings, UK, as a product design engineer for a year before moving to Minnesota to pursue a career in biomedical engineering. He is currently in the fourth year of his graduate studies at the University of Minnesota in Biomedical Engineering and is striving for his PhD degree in 2011.



Andreas Bermann

Chapter F.65

Siemens Healthcare
Imaging and Therapy Division, SYNGO
Erlangen, Germany
andreas.bermann@siemens.com

Andreas Bermann received his degree as medical doctor from the University Medical School of Düsseldorf. He is now responsible for the product definition of the medical imaging software syngoTM at Siemens Healthcare. With his team of highly specialized software engineers, physicists and medical doctors he is developing software for imaging modalities, advanced visualization applications and PACS. In 1998 he achieved his Masters Degree in Business Administration from the University of Bayreuth.

Ulrich Böckler

Sorin Group Deutschland GmbH
München, Germany
ulrich.boeckler@sorin.com



Chapter D.32

Ulrich Böckler is holder of the European Certificate in Cardiovascular Perfusion (ECCP). For several years he was Chief of the Perfusion Department at the German Heart Centre Munich. He is currently working as Product Manager heart lung machines (HLM) for Sorin Group Deutschland GmbH.

Armin Bolz

Karlsruhe Institute of Technology
Institute for Biomedical Engineering
Karlsruhe, Germany
armin.bolz@kit.edu



Chapter D.38

Armin Bolz received his PhD in Physics from the University of Erlangen. He spent some years with Biotronik as head of R&D for pacemakers and defibrillators. Since 1999 Armin Bolz is a Professor for Biomedical Engineering at the Karlsruhe Institute of Technology (KIT). His current research interests are cardiovascular diagnostics, electrostimulation and defibrillation. He also actively supports young start-ups to transfer latest research results into products.

Jörn Borgert

Philips Technologie GmbH
Forschungslaboratorien
Tomographic Imaging Group
Hamburg, Germany
joern.borgert@philips.com

Chapter C.24

Jörn Borgert received his PhD degree in Theoretical Physics from the University Kiel, Germany. He is now Senior Scientist at Philips Research. His current research interests are tomographic imaging and, in particular, magnetic particle imaging (MPI). He received the innovators award of the Federal Ministry of Education and Research of Germany for the application of MPI in breast cancer treatment in 2008.

Michael Born

San Diego State University
Department of Biology
San Diego, CA, USA
Michael.j.born@gmail.com

Chapter C.22

Michael Born received his Bachelor of Science degree in Bioengineering from San Diego State University. He is currently attending graduate school at Northwestern University in Chicago, Illinois where he is working on his Masters Degree, also in Bioengineering.

Guenther Braun

University Medical Center Freiburg
Paediatrics and Adolescent Medicine
Freiburg, Germany
guenther.braun@uniklinik-freiburg.de



Chapter G.71

Guenther Braun received the Masters degree 1996 in Biomedical Engineering from the University of Applied Science in Ulm. Currently he is responsible for the biomedical department of the University Childrens Hospital in Freiburg.

Dirk Büchel

Medical Faculty of Tübingen
Tübingen, Germany
buechel.dirk@t-online.de



Chapter A.6

Dr. sc. hum. Dipl.-Ing. Dirk Büchel is a usability expert who developed the standard procedure for the usability engineering process and final usability testing of medical products within his dissertation.

Thorsten M. Buzug

University of Lübeck
Institute of Medical Engineering
Lübeck, Germany
buzug@imt.uni-luebeck.de

Chapters C.16, C.18, C.24

Professor Thorsten M. Buzug received his PhD in 1993 from the University of Kiel. After a postdoctoral position at the German Federal Armed Forces Underwater Acoustics and Marine Geophysics Research Institute he joined the Philips Research Laboratories Hamburg. As leader of the Philips research cluster Medical Image Processing he was responsible for several. In 2006 he has been appointed as Director of the Institute of Medical Engineering at the University of Lübeck. His research is focused on medical imaging and image computing.

**Marco Capogrosso**

Chapter F.68

Scuola Superiore Sant Anna
ARTS lab
Pisa, Italy
m.capogrosso@sssup.it

Marco Capogrosso received the MS degree in Applied Physics from the Faculty of Mathematical, Physical and Natural Sciences at the University of Pisa in 2009. He is currently working towards a PhD degree in biomedical robotics at the Scuola Superiore Sant Anna, Pisa. His research interests are in neural modelling, finite element models, functional imaging, and neuroscience.

Peter H. Cossmann

Chapter D.35

Med Tech Consulting
Wettingen, Switzerland
peter.cossmann@medtechconsulting.ch



Peter H. Cossmann received his Master degree in Medical Physics from the ETH Zurich and his PhD from the University of Bern. He is currently Head Consultant at Med Tech Consulting in Wettingen. He was former Head of Medical Physics of the Institutes for Radiotherapy at Hirslanden Klinik Aarau and Zurich. Dr. Cossmann holds Lectureships in Biomedical Engineering and Physics and his current areas of research include on-board imaging, cone-beam computed tomography, gating and dosimetry.

Andreas Demosthenous

Chapter D.37

University College London
Electronic and Electrical Engineering
London, UK
a.demosthenous@ee.ucl.ac.uk



Andreas Demosthenous is a Professor of Analogue and Biomedical Electronics in the Department of Electrical and Electronic Engineering, University College London, UK. His main area of research is analog and mixed-signal integrated circuits for biomedical, communication, sensor and signal processing applications. He has numerous collaborations for interdisciplinary research and has published over 150 articles in journals and international conference proceedings.

Thomas M. Deserno

Chapter F.62



RWTH Aachen University
Aachen, Germany
Deserno@ieee.org

Thomas M. Deserno (born as Lehmann) is Professor of Medical Informatics at RWTH Aachen University, where he heads the Medical Image Processing Group within the Department of Medical Informatics. His research interests include discrete realizations of continuous image transforms, applications to quantitative measurements for computer-assisted diagnoses, and content-based image retrieval from large medical databases.

Nick Donaldson

Chapter D.37



University College London
Medical Physics & Bioengineering
London, UK
nickd@medphys.ucl.ac.uk

Professor Donaldson studied Engineering at Cambridge University and did a PhD at University College London. He directs the Implanted Devices Group and has been Principal Investigator for many projects related to implants and functional electrical stimulation. His research interests include implant technology, neuroprosthesis that use nerve signals as inputs; stimulators of nerve roots; and electrical stimulation for recreational exercise of paralyzed legs.

William K. Durfee

Chapter B.14

University of Minnesota
Department of Mechanical Engineering
Minneapolis, MN, USA
wkdurfee@umn.edu



William Durfee is with the Department of Mechanical Engineering at the University of Minnesota. He received the AB degree in Engineering and Applied Physics from Harvard University and the MS and PhD degrees in Mechanical Engineering from MIT. His professional interests include design of medical devices, rehabilitation engineering, advanced orthotics, biomechanics and physiology of human muscle including electrical stimulation of muscle, product design and design education.

Günter Edlinger

g.tec medical engineering GmbH
Graz, Austria
edlinger@gtec.at



Chapter E.52

Günter Edlinger studied control engineering and received his PhD in biomedical engineering from the University of Technology Graz where he was an Assistant Professor from 1993 to 2001. He is co-founder and CEO of g.tec medical engineering GmbH and has been working there since 1999. His research interests comprise invasive and noninvasive brain computer interfaces, neurophysiological instrumentation aspects and inverse problems.

Amir Eftekhar

Imperial College London, South
Kensington Campus
Centre for Bio-Inspired Technology
London, UK
a.eftekhar@imperial.ac.uk

Chapter E.56

Amir Eftekhar is a Research Associate in the Centre for Bio-Inspired Technology, one of the founders of the Institute of Biomedical Engineering, and now a part of the EEE department. His research involves applications of interfaces for neurological studies including electrode technology for interfacing with the central and peripheral nervous system, front-end electronics (analog/digital) for implantable or portable systems to interface with these electrodes and advanced signal processing methods.

Mariana Fernandes

University of Minho
Department of Industrial Electronics, DEI
– Campus de Azurém
Guimarães, Portugal
mfernandes@dei.uminho.pt

Chapter G.74

Mariana Fernandes received the Integrated Master degree in Biomedical Engineering from the University of Minho (2002-2007). She is currently pursuing the PhD degree within the MIT/Portugal Program in bioengineering at the Department of Industrial Electronics, University of Minho. Her research area is the development of wearable and contactless technologies to monitor bioelectric signals.

Eduardo Fernandez

Universidad Miguel Hernández
Bioengineering Institute
Elche, Spain
e.fernandez@umh.es



Chapters B.11, D.41

Eduardo Fernandez is a Professor of Cellular Biology and Director of the Visual Rehabilitation and Neuroprosthesis Unit in the Bioengineering Institute of the University Miguel Hernández (Spain). He received a MD degree from the University of Alicante (1986) and a PhD in Neuroscience in 1990. He is actively working on the development of visual neuroprostheses and brain machine interfaces. He is also working on brain plasticity and cortical reorganization in severe vision loss.

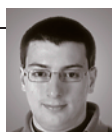
Fabiola Fernandez-Gutierrez

University of Dundee
Institute for Medical Science and
Technology
Dundee, UK
f.fernandezgutierrez@dundee.ac.uk



Chapter C.25

Fabiola Fernandez-Gutierrez received a degree in Telecommunication Engineering and a Master degree in Automatic Control, Robotics and Telematics from the University of Sevilla, Spain. She is now working on her PhD at the Institute for Medical Science and Technology on the European Project Integrated Interventional Imaging Operating System (IIIOS) focusing on the design and improvement of ergonomics workflow for multimodality image-guided procedures.

Celso P. Figueiredo

University of Minho, Campus de Azurém
Department of Industrial Electronics
Guimarães, Portugal
celso.figueiredo@dei.uminho.pt

Chapter G.74

Celso Pitães Figueiredo received his MSc degree in Biomedical Engineering – Medical Electronics from the University of Minho in 2007, Guimarães, Portugal. He is currently working towards his PhD in Biomedical Engineering at the University of Minho, in collaboration with the Fraunhofer Institute for Biomedical Engineering, St. Ingbert, Germany. His thesis involves the research and development of wearable and wireless systems for health monitoring.

**Harald Fischer**

Chapter G.70

Creamedix GmbH
Weingarten, Germany
hafi@creamedix.eu

Harald Fischer received his Diploma and PhD degree in Biomedical Engineering from the Technical University of Karlsruhe, Germany. He worked for several years as the Head of the Institute of Biomedical Engineering and Biophysics at the Karlsruhe Institute of Technology (formerly Research Center Karlsruhe) in the field of robotic surgery and new materials for surgical interventions. He is now the CEO of Creamedix GmbH producing medical implants out of shape memory alloys. His research interests are new materials for medical applications, medical coatings and cell growing applications.

Martin R. Fischer

Chapter F.64

Private University Witten/Herdecke
gGmbH
Fakultät für Gesundheit
Witten, Germany
martin.fischer@uni-wh.de



Dr. Fischer is a General internist and Endocrinologist and is Professor, Dean for Education, and Director of the Institute for Teaching and Educational Research in Health Sciences at the Faculty for Medicine of Witten/Herdecke University, Germany. He received the Master of Medical Education (MME) from the University of Berne, Switzerland, and is also certified in medical informatics.

Óscar S. Gama

Chapter G.74

Universidade do Minho,
Campus de Gualtar
Departamento de Informática
Braga, Portugal
osg@di.uminho.pt



Óscar Gama finished his education in Electronic Engineering at the University of Oporto in 1989 and received a Master degree in Informatics from the University of Minho (Braga) in 2003. He is currently a PhD student in the Electronics Department of the University of Minho. His research focuses on self-reconfiguring e-health wireless sensor networks with quality of service.

**Stephan Garbe**

Chapter D.45

University Hospital of Bonn
Radiology Department
Bonn, Germany
garbe@uni-bonn.de

Stephan Garbe received his PhD in Physics from the University of Münster in 1995. After a postdoctoral position at the Risø National Lab, he worked as Medical Physicist first at the Department for Radiotherapy at the University Hospital of Essen and later at the Department for Radiology at the University Hospital of Bonn. Since 2007 he is Head of the Medical Physics Department. His current research interests are in-vivo dosimetry, dosimetric verification in IMRT and quality assurance in radiotherapy.

**Belinda Garner**

Chapter E.56

Imperial College London, South
Kensington Campus
Institute of Biomedical Engineering
London, UK
b.garner@imperial.ac.uk

Belinda Garner received her Bachelor of Science (Honours) degree in Neuroscience/Anatomy and Cell Biology and her PhD degree in Behavioural Neuroscience from the University of Melbourne, Australia. Her research interests include understanding the role of stress in the development and maintenance of psychiatric disorders and in the development of novel technology for monitoring brain and peripheral nerve function.

Armin Gärtner

Chapter F.58

Ingenieurbüro für Medizintechnik
Erkrath, Germany
armin.gaertner@t-online.de



Armin Gärtner successfully completed his engineering studies at the University of Applied Sciences in Gießen, Germany and has been working in the hospital sector for many years. He is an Official Expert for medical technology at the Chamber of Industry and Commerce – District Düsseldorf and owner of an engineering office for medical technology. He is Member of the Standards Developing Organization 80001 and author of numerous publications and specialized books regarding subjects of medical engineering and information technology.

Bernhard Gleich

Philips Technologie GmbH
Tomographic Imaging Group
Hamburg, Germany
bernhard.gleich@philips.com



Chapter C.24

Bernhard Gleich received his Diploma in Physics from the Institute of Surface Chemistry and Catalysis, University Ulm, Germany. He is now Senior Scientist at Philips Research. His current research interests are tomographic imaging and magnetic particle imaging. He is one of the inventors of magnetic particle imaging (MPI).

Rudolf Götz

Aloka GmbH
Willich, Germany
R.Goetz@aloka-europe.com



Chapter C.17

Rudolf Götz received the Dipl.-Ing. in Electronic Engineering from the FH Karlsruhe in 1972 and the Dipl.-Ing. in Medical Engineering and Biological Cybernetics from the University of Karlsruhe in 1979. Currently he is product manager for ultrasound at ALOKA GmbH, Germany.

Christoph Guger

g.tec medical engineering GmbH, Guger
Technologies OG
Schiedlberg, Austria
guger@gtec.at



Chapter E.52

Dr. Christoph Guger studied Biomedical Engineering at the University of Technology Graz and Johns Hopkins University in Baltimore, USA. Then he did research work at the Department of Medical Informatics at the University of Technology Graz and received his PhD degree in 1999 with the design of the first real-time brain computer interface (BCI) system with continuous feedback. He also developed the real-time analysis with common spatial patterns which is still the fastest and most accurate approach for oscillatory BCI. He is co-founder of g.tec where he works since 1999.

Eugenio Guglielmelli

Universita' Campus Bio-Medico
CIR – Center For Integrated Research
Rome, Italy
E.Guglielmelli@Unicampus.it



Chapter D.42

Eugenio Guglielmelli (MSc 1991, PhD 1995 both in Electronical Engineering from the University of Pisa, Italy) is Full Professor of Bioengineering at Università Campus Bio-Medico (Rome, Italy) where he serves as the Director of the Laboratory of Biomedical Robotics and Biomicrosystems. His main research interests are in human-centred robot design, biomechatronics, biomorphic robot control, neurobotics, rehabilitation and assistive robotics.

Martin Haag

Heilbronn University
Medical Informatics
Heilbronn, Germany
martin.haag@hs-heilbronn.de



Chapter F.64

Martin Haag is a Professor for Software Engineering and Head of the Lab e-Learning in Medicine of the Centre for e-Learning Technology at Heilbronn University, Germany and head of the Centre for Virtual Patients at the University of Heidelberg, Germany. His research group focuses on development of virtual patients and secure electronic examinations.

Reiner Haag

Lawton GmbH & Co. KG
Fridingen, Germany
reiner.haag@lawton.de



Chapters D.34, G.72

Reiner Haag received the Diplom Ingenieur degree in Electronics and Mechanical Engineering from the University of Applied Science Furtwangen, Germany, in 1985. After 6 years in R&D and 10 years International Product Management in electrosurgery he had gained 2 years of experience in sales of endoscopic instruments. He has eight publications and 3 patents. Since 2002 he is General Manager at Lawton Medizintechnik, a Company producing special high-end surgical instruments.

**Peter Haas**

Chapter F.59

University of Applied Sciences and Arts
Dortmund
Medical Informatics
Dortmund, Germany
haas@fh-dortmund.de

Academic Studies Medical Informatics 1977–1982, Project Manager in a large-scale hospital for the implementation of a radiological information system from 1983 to 1984, Project Manager and later Head of Department of Medical Informatics at the University of Heidelberg 1985–1989, Marketing Manager Public Authorities Software AG 1989–1990, Director Sales, Marketing, training hospital information systems vendor 1991–1993. Since 1994 Professor for Medical Informatics. His research activities concern information systems in healthcare and electronic patient records, health telematics, knowledge management based systems in healthcare.

Andreas Hahn

Chapter D.32

Sorin Group Deutschland GmbH
General Management
München, Germany
andreas.hahn@sorin.com



Andreas received the MS degree in Electronics and Telecommunications from the TH Karlsruhe and the Doctors degree from the Technical University of Breslau. He is more than 35 years active in medical industry. Starting as R&D Engineer, Head of R&D for medical lasers, VP operations of MBB Medical Technology, he is now General Manager of Sorin Group Deutschland GmbH within CP BU. He is Member of the Operations Council for the Sorin Group. Board member of Laser- und Medizin-Technologie LMTB GmbH. He holds more than 30 patents for medical lasers and heart-lung machines.

Sibylle Hanus

Chapter G.73

Textile Research Institute
Thuringia-Vogtland
Textile Structures and Materials
Greiz, Germany
s.hanus@titv-greiz.de



Sibylle Hanus received the diplomas in Physical Technics and Engineering Economics from the University of Applied Sciences Zwickau, Germany. Since 1999 she is working at the Textile Research Institute Thuringia-Vogtland, Greiz, Germany as scientist in the development of medical textiles, especially in the field of invasive medical devices. Since 2008 she is team leader of the group Textile Structures and Materials.

**Michael Heinlein**

Chapter F.57

Mednovo Medical Software Solutions
GmbH
Berlin, Germany
info@mednovo.de

Michael Heinlein is co-founder and co-owner of Mednovo Medical Software Solutions GmbH, founded in 2002. As Managing Director, he focuses on marketing, sales, support, business development and organization. Mednovo is providing software solutions in healthcare and offers an overall IT concept, optimizing the process of a daily routine in hospitals, clinics and medical engineering companies.

**Ewald Hennig**

Chapter D.36

Deutsches Herzzentrum Berlin
Berlin, Germany
Hennig@dhzb.de

Ewald Hennig received a PhD in Aeronautical Engineering from the Technical University Berlin in 1965. There he was with the Department of Biomedical Research until 1971. In 1972 he joined the Research Group "Mechanical Heart Assist and Total Heart Replacement" of E. S. Bücherl at the Free University of Berlin as Technical Director of Experimental Surgery. In 1985 he was Visiting Professor at the Second Medical University of Shanghai. Since 1988 he has been a member of the DHZB-MCSS Research Group (Prof. Hetzer) as Senior VAD Coordinator. Research activities concern BiVAD and TAH with rotary blood pumps.

Roland Hentschel

Universitätsklinikum Freiburg
Neonatologie/Intensivmedizin, Zentrum
für Kinder- und Jugendmedizin
Freiburg, Germany
roland.hentschel@uniklinik-freiburg.de



Chapters E.54, G.71

Roland Hentschel is Head of the Department of Neonatology and Intensive Care Medicine, University Children's Hospital Freiburg, since 1996. He is specialized in Neonatology, Intensive Care Medicine and Pediatric Pulmonology. In 2003 he was appointed University Lecturer for neonatology and pediatrics. His main research and clinical work focuses on newborn lung function (grantee of the German Research Council (DFG) from 1990–1996), mechanical ventilation, transfusion medicine, and ethics in neonatology.

Roland Hetzer

Deutsches Herzzentrum Berlin
Berlin, Germany
hetzer@dhzb.de



Chapter D.36

Roland Hetzer, MD, PhD, is Chairman of the Deutsches Herzzentrum Berlin since its foundation in 1986. He received his training in surgery at the Hannover Medical School and specialized in Cardiothoracic and Vascular Surgery after completing his fellowship training at the Pacific Medical Center and Stanford University. He became staff member (1978) in this field at the Hannover Medical School and Associate Professor (1983) when he started heart transplantation. At Berlin within the complete scope of cardiothoracic surgery he is heading the largest programme of mechanical hearts worldwide.

Lothar Heuser



Klinikum der Ruhr-Universität Bochum
Institut für Diagnostische &
Interventionelle Radiologie,
Knappschafts Krankenhaus
Bochum, Germany
lothar.heuser@rub.de

Chapter C.15

Lothar J. Heuser was fellow at the Departments of Diagnostic Radiology and Radiation Therapy at the University of Cologne where he received his *venia legendi* and became an Associate Professor. Since 1986 he is Professor of Radiology and Chairman at the Ruhr-Universität Bochum and Chairman of the Department of Diagnostic and Interventional Radiology, Neuroradiology and Nuclear Medicine. Current research interests are digital image processing and interventional procedures.

Ullrich Hieronymi



Dräger Medical Deutschland GmbH
Lübeck, Germany
ullrich.hieronymi@draeger.com

Chapters E.47, E.48, E.49, E.50

Ullrich Hieronymi received his biomedical engineering graduate and Doctor of Engineering Science from the Ilmenau College of Advanced Technology in 1971 and 1975, respectively. For 17 years he took the biomedical engineering part in a research department for intensive care medicine of a Berlin hospital. Since 1992 until 2011 he worked as a monitoring application specialist in the medical device industry. After his semi-retirement he now proofreads texts on monitoring.

Robert Hitchcock

University of Utah
Bioengineering
Salt Lake City, UT, USA
r.hitchcock@utah.edu



Chapter D.40

Robert Hitchcock is an Assistant Professor in the Department of Bioengineering at The University of Utah and Director of the University's bioDesign program. He has over 26 years of experience bringing new products to the marketplace and has been involved as an engineer, manager, consultant and executive with a number of leading medical device companies.

Gerhard Hoffmann

Orangedental GmbH & Co KG
Biberach, Germany
gh@orangedental.de



Chapter C.20

Gerhard Hoffmann is a Ing.(grad) in Hospital Engineering at the University of Applied Sciences Gießen. He has many years of an experience in medical technology industry. As Director of Sales his focus is on dental diagnostic imaging systems where he specializes in digital inclusion and cone-beam computed tomography (CBCT).

**Klaus-Peter Hoffmann**

Chapters B.9, B.10, B.11, D.39, D.40, D.41, E.46

Fraunhofer Institute for Biomedical Engineering
Medical Engineering and Neuroprosthetics
St. Ingbert, Germany
klaus.hoffmann@ibmt.fraunhofer.de

Dr. Hoffmann is currently a Professor of Biomedical Engineering at the Hochschule für Technik und Wirtschaft des Saarlandes. He is acting as the Head of the Department Medical Engineering and Neuroprosthetics at the Fraunhofer Institute for Biomedical Engineering in St. Ingbert. His main research interests include smart interfaces in Clinical Neurophysiology as well as implantable microsystems especially sensors and actuators for neuroprosthetics.

**Gerald C. Holst**

Chapter C.18

JCD Publishing Company
Winter Park, FL, USA
Jerry@JCDPublishing.com

Dr. Gerald C. Holst is a lecturer and consultant for thermal imaging system design, applications, and testing. He developed software that simulates imaging system performance. He authored 6 books which are published by JCD Publishing Company. Dr. Holst is a SPIE Fellow and chairs the SPIE conference on Infrared Imaging Systems since 1990.

Sebastian Hoth

Chapter B.12

University of Heidelberg
ENT Hospital – Audiology
Heidelberg, Germany
sebastian.hoth@med.uni-heidelberg.de



Professor Sebastian Hoth, Head of the Audiology Unit at the University ENT Hospital in Heidelberg, studied Physics at the University of Erlangen and was awarded his PhD in 1982. He completed his post-doctoral thesis in 1996 and was appointed Professor in 2004. His scientific activity is dedicated to objective audiometry, cochlear implant and other implantable hearing systems. Parallel to this, he is deeply involved in audiology education, the training of students and the formation of professionals.

Stephen A. Howard

Chapter D.43

University of Minnesota
Department of Biomedical Engineering and Surgery
Minneapolis, MN, USA
howa0255@umn.edu



Stephen Howard is a PhD graduate student in Biomedical Engineering at the University of Minnesota. He earned his Masters degree in Biochemistry and Chemistry at Gustavus Adolphus College in St. Peter, MN. He is interested in the effects of fatty acids on the membrane proteins and ion channels, particularly looking at signal modification and performance pre and post ischemia.

**Bernhard Hug**

Chapter D.34

KLS Martin GmbH + Co. KG
Umkirch, Germany
Bernhard.Hug@klsmartin.com

Bernhard Hug studied Biomedical Engineering in Gießen and Berlin and received his PhD from the Faculty of Mathematics and Natural Sciences of the Humboldt-Universität zu Berlin, Germany. He is Head of Development for Electrosurgical Accessories at KLS Martin, a company of the KLS Martin Group. A main focus of his research activities is the clinical application of electrosurgical technology in different medical specialties.

**Paul A. Iaizzo**

Chapters B.14, D.43

University of Minnesota
Department of Surgery
Minneapolis, MN, USA
iaizz001@umn.edu

Paul Iaizzo earned the PhD degree in Physiology, and is Professor of Surgery, Integrative Biology and Physiology, Anesthesiology, and Carlson School of Management at the University of Minnesota. He heads the Visible Heart® Laboratory, where his main research focus is translational systems physiology and his research group has developed a unique isolated working large mammalian heart model.

Erwin Immel

University of Dundee
Institute for Medical Science and
Technology
Dundee, UK
e.z.immel@dundee.ac.uk



Chapter C.25

Erwin Immel graduated 2006 from a Five-Year Degree in Medical Engineering at the University of Applied Science in Gelsenkirchen, where he received a Master of Science degree. Before starting his PhD, Erwin worked as Research and Development Engineer at Biophan Europe. The research topic of his PhD projects (University of Dundee) is the improvement of the visualization of vascular implants such as vena cava filters, stents, and prosthetic heart valves in MRI.

Klaus-Martin Irion

Karl Storz GmbH & Co. KG
Tuttlingen, Germany
K.Irion@karlstorz.de



Chapter C.19

Klaus-Martin Irion is the Global Vice President of Research and Technology at Karl Storz, Tuttlingen, Germany. He received his engineering diploma and his doctorate from the Faculty of Electronic Engineering of the University of Stuttgart. His scientific work focused on high-frequency ultrasonic image processing and tissue characterization at the Institute of Biomedical Engineering, Stuttgart. Dr. Irion is over 20 years with Karl Storz. Before taking over his position as Global Vice President of Research and Technology he was Head of R&D/Electronic Engineering.

Heinz-Michael Just

Klinikum Nürnberg
Institute of Hospital Epidemiology,
Medical Microbiology and Infectious
Diseases
Nürnberg, Germany
just@klinikum-nuernberg.de

Chapter A.3

Heinz-Michael Just, MD, is a specialist for microbiology, virology and hospital epidemiology, for hygiene and environmental medicine and a specialist for infectious diseases. He is Head of the Institute of Hospital Epidemiology, Medical Microbiology and Infectious Diseases, Klinikum Nürnberg, Germany. He is also a Member of the Commission for Hospital Hygiene and Infectious Disease Prevention (KRINKO) appointed by the Ministry of Health as well as a Member of the Committee for Biological Agents (ABAS) appointed by the Ministry of Labour.

Daniel W. Kauff

University Medicine of the Johannes
Gutenberg University Mainz
Department of General and Abdominal
Surgery
Mainz, Germany
Kauff@ach.klinik.uni-mainz.de

Chapter E.55

Daniel W. Kauff received his medical doctorate from the University Medicine of the Johannes- Gutenberg University of Mainz, Germany. Since 2008, he is working as a physician and research associate at the Department of General and Abdominal Surgery, University Medicine of Mainz, Germany. His current scientific interests are colorectal surgery and intraoperative pelvic neuromonitoring.

Rüdiger Klar

Universitätsklinik Freiburg
Institut für Medizinische Biometrie und
Medizinische Informatik
Freiburg, Germany
ruediger.klar@web.de



Chapter F.60

Prof. em. Dr. rer. nat. Rüdiger Klar studied in Bonn and Hamburg and worked two years in a software company at Hannover. From 1986 till 2007 he was Head of the Department for Medical Informatics at the University Hospital Freiburg. His scientific and practical work deals with patient care systems, telemedicine, medical classifications and IT standards, health economy and medical decision making. He is member of several international scientific societies and editorial boards of scientific journals. He was President of the German Society of Medical Informatics, Biometry and Epidemiology and is still active in this field.

Werner Kneist

University Medicine of the Johannes
Gutenberg University Mainz
Department of General and Abdominal
Surgery
Mainz, Germany
werner.kneist@unimedizin-mainz.de



Chapter E.55

Werner Kneist is currently an Associate Professor in the Department of General and Abdominal Surgery of the University Medicine of the Johannes Gutenberg University Mainz. His research focuses on colorectal surgery with a special interest in the oncological and functional outcome. Over the past years he and his interdisciplinary group have developed a series of innovative techniques for intraoperative neuromonitoring of pelvic autonomic nerves.

Klaus P. Koch

University of Applied Sciences Trier
Department of Engineering
Schneidershof, Trier, Germany
koch@fh-trier.de



Chapter F.61

Klaus Peter Koch received his PhD in 2003. From 1998 to 2007 he worked at the Fraunhofer Institute for Biomedical Engineering. Currently he is Full Professor at the University of Applied Sciences Trier, Germany. His research interest is system integration for neural implants, design and simulation of electrodes for recording and stimulation, active implantable electronics and artefact models.

Heike Kramme

Titisee, Germany
kramme-titisee@t-online.de



Chapter A.1

Heike Kramme is a Graduate in Administration Sciences after studies in Law and Management Sciences focusing on health care at the Universities of Freiburg and Constance, Germany. Heike Kramme has many years of professional experience in human resources management, among others in publishing. She has various publications about health policy and health economics.

Rüdiger Kramme

Titisee, Germany
kramme-titisee@t-online.de



Chapters A.1, A.4, B.7, B.8, D.28, E.47, E.48, E.49, E.50

Rüdiger Kramme is a Graduate Engineer and studied Biomedical and Hospital Engineering as well as National Economy in Gießen und Freiburg, Germany. He has many years of professional experience in sales, marketing and human resources development in medical device industry for consumer and investment capital goods. He also is a Lecturer for Medical Engineering at the University of Applied Sciences in Gießen. Rüdiger Kramme has authored numerous scientific publications in magazines and books. He is the founder and Editor of the standard work *Medizintechnik – Verfahren, Systeme, Informationsverarbeitung* and the Dictionary *Technische Medizin* published by Springer.

Ursula Krechel

University Clinic Freiburg
IT-Department
Freiburg, Germany
Ursula.krechel@uniklinik-freiburg.de



Chapter B.9

Uschi Krechel has studied Electronic Engineering at the Technical University of Aachen, Germany and worked as an Application Engineer in German companies building electrophysiological equipment such as EMG, EEG, Electronystagmographs for 13 years. Among these were Toennies and Jaeger. Currently she works as an IT Specialist at the University Clinic of Freiburg, Germany.

Harald Kronberg

Michelstadt, Germany
haraldkronberg@freenet.de



Chapters E.49, E.51

Harald Kronberg received the Master degree and the PhD in Physics both from Göttingen University. He then spent seven years in applied research of the Göttingen Max-Planck-Institute of Experimental Medicine. In 1984, he joined the Applied Research Department of Hellige in Freiburg, now part of General Electric Healthcare. Until his retirement end of 2009, he was Marketing Manager of GE's patient monitoring platforms.

**Klaus A. Kuhn**

Chapter F.59

Technische Universität München (TUM)
Institute of Medical Statistics and
Epidemiology
München, Germany
klaus.kuhn@tum.de

Klaus Kuhn is a Full Professor of Medical Informatics at the Technical University Munich and a member of both the Medical and the Informatics Faculty. He holds degrees in Medicine, Mathematics, and Computer Science. He chaired the Editorial Board of Medinfo 2007, the World Congress of Medical Informatics. He is past President of the German Association of Medical Informatics, Biometry, and Epidemiology, and he is a Fellow of ACMI. His research interests are information systems with a special focus on translational research.

Bernhard Kulik

Chapter G.69

Maquet GmbH & Co. KG
Rastatt, Germany
b.kulik@maquet.de



Bernhard Kulik is Director of Product Management Operating Room tables at Maquet GmbH & Co. KG in Rastatt, Germany. He has co-authored some chapters in medical textbooks published by Springer Medizin Verlag, Heidelberg.

Timothy G. Laske

Chapter D.43

Medtronic, Inc.
Mounds View, MN, USA
tim.g.laske@medtronic.com



Tim Laske has a BS degree in Biological Sciences and Mechanical Engineering from Michigan Technological University. He received his Masters degree in Mechanical Engineering from the University of Michigan, Ann Arbor, and his PhD in Biomedical Engineering from the University of Minnesota where he serves as an Adjunct Associate Professor. Currently, Tim is a Senior Product Development Director in the Structural Heart Business at Medtronic and a Bakken Fellow. He is responsible for research and development for current and future heart valve repair and replacement products.

Martin Leonhard

Chapter C.19



Karl Storz GmbH & Co. KG
Research and Technology
Tuttlingen, Germany
m.leonhard@karlstorz.de

Martin Leonhard is Head of Technology Management at Karl Storz, Tuttlingen, Germany. He received his physics diploma and doctorate both from the University of Ulm. He worked on time-resolved spectroscopy at the Max-Planck-Institute in Martinsried and on medical laser applications at the Munich-Großhadern University Hospital. He was Deputy Head of Marketing Europe before taking his current position to identify and evaluate future technologies for Karl Storz.

**Xiao Liu**

Chapter D.37

University College London
Department of Electronic and Electrical
Engineering
London, UK
x.liu@ee.ucl.ac.uk

Xiao Liu received the B.Eng. degree from Xi'an Jiaotong University in 2003, the MSc degree from University of Southampton in 2004, and the PhD degree from the University College London (UCL) in 2009. He is currently a Research Associate at UCL. His research interests include analogue and mixed-signal integrated circuit design for biomedical applications, neuroprosthesis and microelectronic sensor design.

Martin Maier

Chapter E.53

Philips Healthcare
Böblingen, Germany
martin.maier@philips.com



Martin Maier holds an engineering degree in Telecommunications from the University of Applied Science in Esslingen and an MBA in International Marketing from the European School of Business in Reutlingen. During his career Martin has gathered experience in the area of production, software quality engineering, software development, product support and product marketing. In his current role as Global Senior Product Manager he is responsible for the lifecycle of a complete product family in healthcare industry.

Giovanni Maio

University of Freiburg
Institute of Bioethics and History of
Medicine
Freiburg, Germany
maio@ethik.uni-freiburg.de



Chapter A.2

Giovanni Maio has the Chair of Bioethics at the University of Freiburg. He owns a Master degree in Philosophy, a PhD in Medicine and a habilitation thesis in Medical Ethics. He is Director of the Interdisciplinary Center for Ethics and Director of the Institute of Bioethics and History of Medicine. He is member of ethics committees of the German Parliament and of the Medical Association. He has written over 200 publications on biomedical ethics and takes a critical look on the mere technological self-conception of modern medicine.

Albrecht Malkmus

GE Medical Systems Information
Technologies
Freiburg, Germany
albrecht.malkmus@ge.com

Chapter A.5

Albrecht Malkmus received the Masters degree in Electronic Engineering and Information Technology from the University in Frankfurt, Germany. He is currently the Regulatory Affairs Leader and Member of the Quality Management Department at GE Medical Systems Information Technologies in Freiburg, Germany. He is member of the German National Standardization Committee and the Regulatory Affairs Working Group of the ZVEI.

Kei Masani

Toronto Rehabilitation Institute
Lyndhurst Centre
Toronto, Ontario, Canada
k.masani@utoronto.ca

Chapter D.44

Kei Masani received the PhD degree in Physical and Health Education from the University of Tokyo, Tokyo, Japan. He is now a Scientist at Toronto Rehab, Toronto, Canada. He received the Young Investigator Award from the Japanese Society of Biomechanics in 2000. His research interests are in understanding human movement and movement variability, from the view of neuro-mechanical interaction and sensory-motor integration.

Ulrich Matern

wwH-c GmbH
Tübingen, Germany
ulrich.matern@wwH-c.com



Chapter A.6

Ulrich Matern is a surgeon (Associated Professor, Medical Faculty of Univ. Tübingen, Germany) and CEO and owner of wwH-c GmbH Tübingen, Germany. wwH-c operates the Experimental-OR as a lab for research, development and testing of medical and hospital technologies as well as a teaching and training centre for hospital engineers, physicians and nursing staff. Dr. Matern represents the German Society of Surgeons within the German Standardization Committee for Usability. He is working as a consultant for hospitals worldwide regarding planning of new facilities and also auditing hospitals using the Best Hospital Practice standard that was developed by wwH-c together with TÜV.

John McNulty

San Diego State University
Department of Biology
San Diego, CA, USA
jmcnulty24@gmail.com



Chapter C.22

John McNulty received his Bachelor of Science degree in Biology from San Diego State University. He is currently working as a Research Assistant in the lab of Dr. Robert Pozos in San Diego, California. John is in the process of applying to medical school where he wants to pursue a career in surgery.

**Andreas Melzer**

Chapters C.25, C.26

University Dundee
IMSaT
Dundee, Scotland, UK
a.melzer@dundee.ac.uk

Andreas Melzer, MD DDS, is Professor of Medical Technology and Founding Director of the Institute for Medical Science and Technology IMSaT at the University Dundee. Funded by Northern Research Partnership it is hosting GE's first European Centre of Excellence for MRI-guided interventions and surgery. 60 scientist are working in the field of multimodality image-guided diagnosis and therapy, biophotonics, ultrasound, MRI, interventional and surgical technologies and nanobiotechnology.

**Paulo M. Mendes**

Chapter G.74

University of Minho, Campus de Azurém
Department of Industrial Electronics
Guimarães, Portugal
paulo.mendes@dei.uminho.pt

Paulo Mendes received the PhD degree in Industrial Electronics from the University of Minho, Portugal, in 2005. Since then he has been an Assistant Professor at the University of Minho and a researcher in the micro/nanotechnologies and biomedical applications research group (Algoritmi). He has published more than 90 journal and conference papers. His main research interests are in wearable devices, wireless sensor networks, and antenna miniaturization for biomedical applications.

Silvestro Micera

Chapters D.39, F.68

ETH Zürich, ETL K 10.1
Institut für Automatik
Zürich, Switzerland
micera@control.ee.ethz.ch



Silvestro Micera received the University degree in Electrical Engineering from the University of Pisa in 1996 and the PhD degree in Bio-Engineering from Scuola Superiore Sant'Anna (SSSA) in 2000. From 2000 to 2009 he has been Assistant Professor at SSSA where he is now the Head of the Neuroprosthesis Group. He is currently Adjunct Assistant Professor at the ETH Zurich.

Kostis Michelakis

Chapter E.56

Imperial College London, South
Kensington Campus
Institute of Biomedical Engineering
London, UK
k.michelakis@imperial.ac.uk



Kostis Michelakis is Research Fellow and Bionanotechnology Facility Manager in the Institute of Biomedical Engineering at Imperial College London. His current research is concerned with micro/nano-fabricated devices and systems at the interface between biochemistry and microelectronics. He has worked in the area of micro/nano fabrication for over 20 years. He received his PhD from the University of Athens and has previously held posts at FORTH (Greece) and the Department of Electrical and Electronic Engineering of Imperial College London.

**Uwe Möhring**

Chapter G.73

Textile Research Institute
Thuringia-Vogtland
Greiz, Germany
u.moehring@titv-greiz.de

Dr. Uwe Möhring received the doctorate for metal organic catalysis from the Julius-Maximilians-University Würzburg in 1995. Prior to his appointment as Managing Director of TITV Greiz in 2001, he worked for Degussa Corporation. At the TITV Greiz he brought together a team of 60 interdisciplinary scientists for textile microsystems technology and special surface technologies of textiles. The focus is on medical applications of textiles and the development of textile electrodes and sensor structures as well as special intelligent textiles for health and disease management.

**Wolfgang Müller-Wittig**

Chapter F.63

Nanyang Technological University (NTU)
Fraunhofer IDM@NTU
Singapore
wolfgang.mueller-wittig@fraunhofer.sg

Wolfgang Müller-Wittig is Director of the Project Centre for Interactive Digital Media at Nanyang Technological University. He is also an Adjunct Associate Professor at the NTU School of Computer Engineering. He received his Dr.-Ing. in Computer Science from the Technische Universität Darmstadt, Germany. His research interests include highly interactive 3-D computer graphics for manufacturing, engineering, edutainment, cultural heritage, and biomedical sciences.

Andreas Neudeck

Textile Research Institute
Thuringia-Vogtland
Greiz, Germany
a.neudeck@titv-greiz.de



Chapter G.73

Andreas Neudeck received his Master of Education from the Applied Pedagogical University of Halle, Germany and a PhD in Physical Chemistry from the same University. After his PhD he joined the Leibniz Institute for Solid State and Materials Research Dresden (IFW) for a Habilitation Fellowship of the DFG. During his DFG Fellowship he spent one year at the Université Paris 7. He obtained his Habilitation (DSc) in Physical Chemistry from Dresden University of Technology in 1999. Since 2000 he works at the Textile Research Institute Thuringia-Vogtland (TITV), Germany and is now responsible for the Advanced Research as Representative Head of Research and Development.

Wolfgang R. Nitz

Siemens AG Healthcare Sector
Erlangen, Germany
wolfgang.nitz@siemens.com



Chapter C.23

Wolfgang R. Nitz received his Master degree in Power Electronics from the University of Siegen and holds a Master degree in Experimental Nuclear Physics from the University of Karlsruhe. He received his PhD from the University of Würzburg and is an Assistant Professor for Experimental Radiology at the University of Regensburg. He has been awarded the first Wilhelm-Conrad-Röntgen-Preis in 2001 for his work on vascular interventions under MR guidance. He is currently heading the patent and licensing management of the MR business of the Siemens AG.

Heike Oschatz

Textile Research Institute
Thuringia-Vogtland
Textile Structures and Materials
Greiz, Germany
h.oschatz@titv-greiz.de

Chapter G.73

Heike Oschatz received the diploma in Textile Technology from the University of Applied Sciences Reichenbach, Germany. Since 1990 she has been working at the Textile Research Institute Thuringia-Vogtland (TITV Greiz), Germany, as a scientist in the field of textile materials. She is working as project manager in several national and European projects with focus on textile technology and the development of special woven or knitted textiles for clothing, medicine and technology.

Ernst Pelikan

University Medical Center Freiburg
Hospital Computer Department
Freiburg, Germany
ernst.pelikan@uniklinik-freiburg.de

Chapter F.60

Ernst Pelikan received his Diploma in Physics from the Albert-Ludwigs-University of Freiburg, Germany in 1983. He joined the Hospital Computer Center at the University Medical Center Freiburg in 1984, where he is the Head of the Department of Communications and Networks since 1989. His research interests are in network design, network security, standards-based medical data exchange and telemedicine.

Thomas Peyn

Dräger Medical AG & Co. KG
Department for Respiratory Care
Lübeck, Germany
thomas.peyn@draeger.com



Chapter D.27

Thomas Peyn, electrical engineering technician and training manager, has been with Dräger since February 1996. Firmly convinced that clinical application of sophisticated technology is the basis for enhanced therapeutic success his focus and passion is education and training especially within the field of applied health care technology.

Doris Pommi

Siemens Healthcare
Forchheim, Germany
doris.pommi@siemens.com



Chapter C.21

Doris Pommi is product manager for interventional radiology at Siemens Healthcare in Germany. She has a background as Medical Laboratory Scientist (MTRA) and marketing consultant.



Milos R. Popovic

Chapter D.44

University of Toronto
Rehabilitation Engineering Laboratory,
Institute of Biomaterials and Biomedical
Engineering
Toronto, Ontario, Canada
milos.popovic@utoronto.ca

Milos R. Popovic received his PhD in Mechanical Engineering from the University of Toronto, Ontario, Canada in 1996, and the Dipl. Electrical Engineer degree from the University of Belgrade, Yugoslavia in 1990. Dr. Popovic is the Toronto Rehab Chair in Spinal Cord Injury Research. He is also a Professor in the Institute of Biomaterials and Biomedical Engineering at the University of Toronto. His fields of expertise are functional electrical stimulation. His interests are in the areas of neuro-rehabilitation, physiological control systems, assistive technology, and brain machine interfaces.



Robert S. Pozos

Chapters B.10, C.22

San Diego State University
Department of Biology
San Diego, CA, USA
bpozos@gmail.com

Dr. Robert Pozos, Professor of Biology at San Diego State University, has had extensive experience studying physiological signals in humans in extreme environments. His expertise is in the area of thermal regulation in hot and cold environments. The importance of the role of peripheral circulation in various environments has been addressed using various technologies specifically near infrared spectroscopy. Utilizing this technology, he has demonstrated that the peripheral circulation has complex controls that respond differentially in different anatomical areas.

Anna Radomska-Botelho Moniz

Chapter E.56

Imperial College London, South
Kensington Campus
Institute of Biomedical Engineering
London, UK
a.radomska@imperial.ac.uk



Anna Radomska is a Research Associate at the Institute of Biomedical Engineering in the Imperial College London. The main fields of her research cover development and applications of chemical sensors and biosensors in clinical and biomedical analysis. She received her PhD with distinction in Analytical Chemistry from Warsaw University, Department of Chemistry in 2004. During her PhD she developed several potentiometric and optical biosensors which were successfully used for monitoring, control and assessment of haemodialysis therapy.

Stanisa Raspopovic

Chapter F.68

Scuola Superiore Sant Anna
ARTS lab
Pisa, Italy
s.raspopovic@sssup.it



Stanisa Raspopovic received his MS degree from the Department of Engineering at the University of Pisa, Italy. He is currently working towards the PhD in Biomedical Robotics at the Scuola Superiore Sant Anna, Pisa. His research interests are in neuroprostheses, neural interfaces in animal and human models, neural modelling, and processing of PNS and CNS signals for understanding neural control.



Annette Reinhardt

Chapter A.3

Klinikum Nürnberg
Institute of Hospital Epidemiology
Nürnberg, Germany
annette.reinhardt@klinikum-nuernberg.de

Dr. Annette Reinhardt studied Medicine in Regensburg, Erlangen (Germany) and Winterthur (Switzerland). Since 1993 she has been employed as Doctor of Medicine at the Department of Hospital Hygiene, Clinical Microbiology and Infectious Diseases of the Klinikum Nürnberg, Germany. During her career, Dr. Reinhardt has gathered experience in medical microbiology and healthcare-associated infection surveillance. Her main activity is hospital hygiene with a focus on adapting existing recommendations.



Cristiano Rizzo

Chapter E.52

Micromed S.p.A.
Mogliano Veneto (TV), Italy
cristiano.rizzo@micromed-it.com

Cristiano Rizzo received his Master Degree in Electronic Engineering with Biomedical Specialization from the University of Padova, Italy in 1996. Working for Micromed S.p.A since 1987 as a programmer, he moved to the Micromed French office in 1994 for 2 years. Back in 1996 as Project Development Manager he is actually in Marketing and Sales.

Eckhard Roggenkamp

Klinikum Nuremberg
Institute of Hospital Epidemiology
Nürnberg, Germany
eckhard.
roggenkamp@klinikum-nuernberg.de



Chapter A.3

Eckhard Roggenkamp earned his Diploma as Engineering at the University of Applied Sciences Lübeck, Germany. Since 1977 he is at the Institute of Hygiene, Microbiology and Infectiology at the Klinikum Nürnberg, Germany. His major tasks are controlling of sterilization processes for medical devices, validation of washer-disinfectors, inspection of ventilation in buildings and rooms of health care, advising the clinic in all technical concerns of hygiene. He is Vice-chairman of the DIN Commission Disinfection Apparatus.

Christopher Rolfes

University of Minnesota
Department of Biomedical Engineering
and Surgery
Minneapolis, MN, USA
rolf0053@umn.edu



Chapter D.43

Christopher Rolfes graduated from St. Olaf College in 2006 with a double major in Physics and Mathematics. After this, he worked for a year as a post-baccalaureate researcher at the National Heart, Lung and Blood Institute in Bethesda, MD. While at the NHLBI, he helped to develop programming for an automated microtome, which is capable of producing three-dimensional reconstructions of mouse hearts with micrometer scale resolution. He is currently a PhD graduate candidate in Biomedical Engineering at the University of Minnesota.

Christian Rotsch

Fraunhofer Institute for Machine Tools
and Forming Technology IWU
Department Adaptronics and Acoustics
Dresden, Germany
christian.rotsch@iwu.fraunhofer.de

Chapter G.73

Christian Rotsch received his Diploma in Physical Techniques with the specialization in Biomedical Engineering from the University of Applied Sciences Zwickau, Germany. Between 2004 and 2009 he worked at the Textile Research Institute Thuringia-Vogtland, Germany, as scientist, project and group leader of the smart textiles group in several national and European projects. Since 2009 he works at the Fraunhofer Institute for Machine Tools and Forming Technology. His field of work is the development of active and adaptronic devices for medical applications.

Georg-Friedemann Rust

Rendoscopy AG
Gauting, Germany
gfr@rendoscopy.de

Chapter F.66

Georg-Friedemann Rust studied Physics and Medicine. His PhD was performed at the DESY, German Electron Synchrotron Radiation Laboratory in Hamburg together with the IMDM, University Hospital Hamburg, Eppendorf. Dr. Rust changed to the Ludwig-Maximilians University, Department of Clinical and Interventional Radiology. During the Research activities he worked in different fields, such as 3-D Visualization and x-ray dosage issues. During his further research activities and established scientific cooperations with the International Atomic and Energy Commission (IAEA) of the UN. He also founded together of the Bavarian Government a spin-off company, named Rendoscopy AG. Dr. Rust is currently working as a radiologist in the General Hospital Bogenhausen, Munich.

Christina Sampogna

University of Cambridge
Newmarket, Suffolk, UK
Christina.Sampogna@cantab.net



Chapter F.67

Christina Sampogna is an international lawyer, policy advisor, and economist whose experience covers government, industry, public sector, non-profit sector, and international organizations. Having completed studies in Economics (BA) and in Law (LL. L., LL.B.), she received her LL.M. from the University of Cambridge and her D.E. A. in European Community Law from the College of Europe, Bruges. Professionally qualified in diverse jurisdictions, Christina has developed expertise in numerous legal domains and industrial sectors, including emerging technologies (life sciences; information and communication technologies), health, international trade, and environment/sustainable development.

Gregor Schaefers

MR:comp GmbH
Gelsenkirchen, Germany
schaefers@mrcomp.com



Chapter C.26

Gregor Schaefers obtained his Dipl.-Ing. (FH) degree in Medical Engineering from the University of Applied Sciences Gelsenkirchen, Germany in 2001. He is co-founder, shareholder and Managing Director of MR:comp GmbH, testing laboratory for MR safety and compatibility. He is a member of DIN, ISO, IEC, ASTM standardization committees working in development and optimization of MR testing methods.

Rolf M. Schlegelmilch

SMT medical GmbH & Co.
Würzburg, Germany
r.schlegelmilch@smt-medical.com



Chapter B.8

Rolf Schlegelmilch has more than 30 years of experience in the medical equipment industry. With a focus on diagnostic applications he specializes in pulmonary function and vascular testing, life style and activity monitoring, as well as anti-aging diagnostics. He earned a degree in Mathematics and Economics from the University of Würzburg and worked in several management functions. He is a founder and Managing Director of SMT medical.

Oliver Scholz

HTW Saarland,
University of Applied Sciences
Saarbrücken, Germany
oliver.scholz@htw-saarland.de



Chapter F.61

Oliver Scholz is currently heading the Bio-telemetry Working Group of Fraunhofer IBMT. His main field of research is biomedical telemetry and bio-monitoring incorporating wireless links for medical implant control plus wireless powering and physiological data acquisition. In recent years, this expertise directed him more and more into communication and powering systems for micro robots.

Frank Schön

Aloka Holding Europe AG
Zug, Switzerland
F.Schoen@aloka-europe.com



Chapter C.17

Frank Schön is Marketing Director of Aloka Holding Europe AG. He studied Medicine, Business and Computer Sciences at the Universities of Mainz and Hagen, Germany. He was educated in Internal Medicine and Cardiology at the University Clinic of Essen. After several years of practicing medicine he started in 1999 with Aloka Ultrasound in Germany. After positions in R&D of Aloka Tokyo, Managing Director of Aloka Germany from 2005 to 2010, he is now responsible for International Marketing in Europe.

Arthur Schultz

Hannover Medical School
EEG Monitoring Research Group
Hannover, Germany
ab.schultz@t-online.de



Chapter E.51

PD Dr. Dr. Arthur Schultz, Anaesthesiologist and Medical Computer Scientists (GMDS), is University Lecturer at Hannover Medical School, Hannover, Germany. He is also Head of the Interdisciplinary EEG Monitoring Research Group at Hannover Medical School/Clinic Region Hannover focusing on the automatic classification of electroencephalograms (EEGs) recorded during anaesthesia and intensive care.

Barbara Schultz

Hannover Medical School
Informatik/Biometrie
Hannover, Germany
ab.schultz@t-online.de



Chapter E.51

PD Dr. Barbara Schultz is a University Teacher at Hannover Medical School, Hannover, Germany, and a Member of the Interdisciplinary EEG Monitoring Research Group at Hannover Medical School. Her main research area is electroencephalography (EEG) in patients in the operating theatre and in the intensive care unit with a focus on automatic classification of the EEG.

**Dirk Schulze**

Chapter C.20

DDZ Breisgau
Freiburg, Germany
dirk.schulze@ddz-breisgau.de

Dirk Schulze received the PhD degree in Dentistry from Hamburg University in 2007. He has been with University Freiburg until the end of 2009 and is currently working in a private dental imaging center. His research activities are in further processing dental CBCT data, cephalometric analysis and evaluation of radiation exposure due to dental imaging devices.

Wilhelm Schütte

Chapter D.45

Kreiskrankenhaus Gummersbach,
Academic Teaching Hospital of the
University of Cologne
Department of Medical Radiation Physics
Gummersbach, Germany
wilhelm.schuette@kkh-gummersbach.de



After his graduation in Physics (Dipl. Phys.) in 1986, Wilhelm Schütte has been working as a Medical Physicist at the Department of Medical Radiation Physics of Gummersbach Hospital (Academic Teaching Hospital of the University of Cologne). He has published numerous articles in national and international scientific journals. His interest is in dosimetry of high-energy radiation, radiation treatment planning and IMRT.

Danny Schwabe

Chapter G.73

Textile Research Institute
Thuringia-Vogtland
Greiz, Germany
d.schwabe@titv-greiz.de



Danny Schwabe received the Diploma in Textile and Leather-Technology at the University of Applied Science Zwickau (FH Reichenbach), Germany. Since 2002, he is working at the TITV Greiz as a scientific employee in the field of 3-D warp knitting. He investigated several projects dealing with medical textiles such as compression bandages, operating -table covers, heating textiles and hip protection pads.

**Sanjiv Sharma**

Chapter E.56

Imperial College London, South
Kensington Campus
Institute of Biomedical Engineering
London, UK
sanjiv.sharma@imperial.ac.uk

Sanjiv Sharma is a Research Officer in the Institute of Biomedical Engineering at Imperial College London. His main research areas are micro and submicron fluidic systems, noninvasive and label free detection systems. He did his PhD in Chemistry at the Regional Research Laboratory, Bhopal, India. He has held research positions in France (Institut de Physique Nucléaire d' Orsay and Hospital St. Antoine, Paris) and Germany (Walter Schottky Institut, Technische Universität München).

**Erich Siegel**

Chapter D.30

Dräger Medical AG & Co. KG
Lübeck, Germany
erich.siegel@draeger.com

Erich Siegel received the Master degree and the PhD degree in Physics both from the University of Karlsruhe, Germany. He was assistant and lecturer at the department of applied physics at the University of Bonn. More than 20 years he is engaged in the field of medical technology at Dräger Medical in Lübeck, Germany, where he now is Training Manager of anaesthesiology.

Florian Solzbacher

Chapters D.40, E.46

University of Utah
Electrical and Computer Engineering
Salt Lake City, UT, USA
florian.solzbacher@utah.edu



Dr. Solzbacher is Director of the Microsystems Laboratory at the University of Utah, Co-Director of the Utah Nanotechnology Institute, President of Blackrock Microsystems and an Associate Professor in Electrical and Computer Engineering with adjunct appointments in Materials Science and Bioengineering. His research focuses on harsh environment microsystems and materials, including implantable, wireless microsystems for biomedical and healthcare applications. Professor Solzbacher received his MSc EE from the Technical University Berlin in 1997 and his PhD from the Technical University Ilmenau in 2003.

Silvia Sterzi

Università Campus Bio-Medico
Physical Medicine and Rehabilitation
Rome, Italy
s.sterzi@unicampus.it



Chapter D.42

Silvia Sterzi, MD, is Associate Professor of Physical Medicine and Rehabilitation at THE Campus Bio-Medico University in Rome, Italy, where she serves as the Head of the Department of Rehabilitation and Director of Postgraduate School of Physical Medicine and Rehabilitation. Dr. Sterzi is a Member of the European Board of Physical Medicine and Rehabilitation.

Wilfried Storz

Gebrüder Martin GmbH & Co. KG
Tuttlingen, Germany
wilfried.storz@klsmartin.com



Chapter G.72

Wilfried Storz holds the position of Officer with general commercial power of attorney in the Central Marketing Department of Gebrüder Martin GmbH. His special areas of responsibility are surgical instruments for various medical disciplines and sterilization containers. Besides he has been an active member of the DIN NA 027 Precision Mechanics and Optics Standards Committee (NAFuO), which is part of the Surgical Instruments Working Committee (NA 027-02-01 AA).

Dirk Sunderbrink

Siemens AG – Healthcare Sector
Imaging and Therapy Department
Forchheim, Germany
dirk.sunderbrink@siemens.com



Chapter F.65

Dirk Sunderbrink received a degree in Medical Health Engineering from the University of Applied Sciences Hamburg and in Industrial Engineering from the University of Applied Sciences Bielefeld, Germany. He joined Siemens in 1995 and served for more than 10 years in sales and business management for radiological information systems. Currently he holds the position of Global Marketing Manager for cardiology in angiography business unit. Prior to joining Siemens he was product manager for MRI and CT of Toshiba Medical Systems Germany.

Hajo Tanck

Mednovo Medical Software Solutions
GmbH
Berlin, Germany
info@mednovo.de



Chapter F.57

Hajo Tanck earned his degree in Business Informatics from the University of Applied Sciences Flensburg, Germany. His professional career is closely connected to the healthcare sector. Mr. Tanck works for Mednovo Medical Software Solutions GmbH in the sales department and project management and is responsible for the support of complex projects.

Prashant Tathireddy

University of Utah
Electrical and Computer Engineering
Salt Lake City, UT, USA
p.tathireddy@utah.edu



Chapter D.40

Prashant Tathireddy received the PhD degree in Chemical Engineering from the University of Utah and has been with the Department of Electrical and Computer since September 2005. He received Fraunhofer's 'Outstanding Research Scientist Fellowship' Award in 2007 and was posted as a guest scientist for over a year at the Fraunhofer Institute for Biomedical Engineering (IBMT), St. Ingbert, Germany. Professor Tathireddy's current research focuses on design, fabrication process development and testing of chronically implantable medical microdevices.

Rachel Toomey

University of Dundee
Institute for Medical Science and
Technology
Dundee, UK
r.toomey@dundee.ac.uk



Chapter C.25

Rachel holds a BSc (Hons.) in Radiography and a PhD in the area of medical image display from University College Dublin. She is currently employed at the Institute for Medical Science and Technology, University of Dundee. Her research interests include image perception, development of training models and integration of imaging modalities in the operating theatre.

**Iasonas F. Triantis**

Chapter E.56

Sensors Systems and Circuits Research Group
Department of Electronic and Electrical Engineering
London, UK
i.triantis@ee.ucl.ac.uk

Iasonas Triantis is a Senior Researcher in microelectronics for electrical impedance tomography for cancer imaging at the Electrical and Electronic Engineering Department University College London. During his PhD at the same department, and later as a Research Associate at Imperial College London, he designed neural sensing and stimulation chips and researched alternative neural interfacing methods. He also managed a neural interfacing group and a laboratory.

Jakub Trzebinski

Chapter E.56

Imperial College London, South Kensington Campus
Institute of Biomedical Engineering
London, UK
jakub.trzebinski09@imperial.ac.uk



Jakub Trzebinski received his Bachelor degree (Honours) from the National University of Ireland, Galway and currently is a PhD student at Brunel University and Imperial College London working on electrochemical biosensors, in particular glucose sensors. His research area includes understanding and favourably modifying biosensor-tissue interactions.

Friedrich Ueberle

Chapter D.33

Hamburg University of Applied Sciences
Department of Life Sciences/Biomedical Technology
Hamburg, Germany
friedrich.ueberle@haw-hamburg.de



Friedrich Ueberle received his Diploma in Electrical Engineering from the University of Karlsruhe, Germany. During his PhD he was involved in research for piezoelectric lithotripters. Afterwards, he continued shock wave research and application for 14 years in industry. Since 2002, he is a Professor for Biomedical Device Technology at the Hamburg University of Applied Sciences. His research focuses on ultrasound, shockwaves, medical imaging, and sensors.

**Hans-Peter Uhlig**

Chapter A.4

Dresden, Germany
cu-uhlig@t-online.de

Hans-Peter Uhlig works as a Consulting Engineer in Dresden, Germany specializing in electrical installations for medical facilities. He is member of the Saxon Chamber of Engineers. Since more than 10 years he contributes to standardization of electrical installations for medical facilities within the German Commission for Electrical (DKE), Electronic and Information Technologies of DIN and VDE. He has authored and co-authored one specialist book and several other publications.

**Jörg Vienken**

Chapter D.31

Fresenius Medical Care
Bad Homburg, Germany
joerg.vienken@fmc-ag.com

Joerg Vienken has a degree in Chemical Engineering from the Technical University of Darmstadt and a Doctoral Degree in Biophysics and Engineering from the Technical University of Aachen (RWTH), Germany. Since 25 years he is working in leading positions in the medical device industry. He currently serves as Vice President BioSciences at Fresenius Medical Care in Bad Homburg, Germany. He is member of the Editorial Board of several scientific journals dedicated to biomaterials, artificial organs and medical device technology.

Udo Voges

Chapter G.70

Karlsruher Institut für Technologie
Institut für Angewandte Informatik
Eggenstein-Leopoldshafen, Germany
udo.voges@kit.edu



Udo Voges received his Diploma in Mathematics from the Ludwig-Maximilians-Universität in Munich, Germany and his PhD degree in Computer Science from the Universität Karlsruhe, Germany. He is Senior Scientist at the Karlsruher Institut für Technologie (KIT), Institut für Angewandte Informatik. His research interests are in medical engineering, systems engineering and system safety.

Birgit Wacker

Philips Healthcare
Böblingen, Germany
birgit.wacker@philips.com



Chapter E.53

Birgit Wacker received the degree in Informatics from Hochschule Furtwangen University, Germany in 1988. She started her career at Hewlett Packard as software development engineer for clinical information systems and is now working for Philips Healthcare in international marketing of healthcare IT solutions.

Golam Abu Zakaria

Hospital of the University of Cologne
Department of Medical Radiation Physics
Gummersbach, Germany
zakaria@khh-gummersbach.de



Chapter D.45

Golam Abu Zakaria received his PhD in Medical Physics from Heidelberg University. He currently is chairman of the Department of Medical Radiation Physics at Gummersbach Hospital (University of Cologne) and Professor of Medical Physics/Biomedical Engineering at Gono University, Bangladesh. He has published more than 65 journal and conference papers.

Christian Zapf

Siemens AG – Healthcare Sector
Imaging and Therapy – SYNGO
Erlangen, Germany
christian.zapf@siemens.com



Chapter F.65

Christian Zapf received his Master degree in Computer Science from Clemson University, SC, USA. He joined Siemens Healthcare in 1993 and his primary focus has been on radiology and cardiology IT (RIS, CVIS), image management solutions (PACS), and the magnetic resonance business. As Vice President Business Strategy for the SYNGO business unit of Siemens Healthcare, he is currently responsible for the strategy of the radiology and cardiology IT business of Siemens Healthcare.

Frank Zgoda

Laser- und Medizin-Technologie GmbH
Berlin, Germany
f.zgoda@LMTB.de



Chapter D.29

After studying chemistry and physics at the Freie Universität Berlin, Germany, Frank Zgoda joined the Laser- und Medizin-Technologie GmbH Berlin in 1989. He is consulting manufacturers of innovative medical devices in the fields of laser safety and medical device safety and develops and delivers laser safety courses for physicians, LSOs, and supervisors. He is a member of the German standards committee on medical lasers.

Loredana Zollo

Università Campus Bio-Medico di Roma
Laboratory of Biomedical Robotics and
Biomicrosystems
Rome, Italy
l.zollo@unicampus.it



Chapter D.42

Loredana Zollo received her PhD in Bioengineering in 2004. In 2004, she entered as post-doc fellow at Università Campus Bio-Medico di Roma and joined the Laboratory of Biomedical Robotics and Biomicrosystems. In 2008 she became Assistant Professor in Bioengineering. Her research interests are in the fields of rehabilitation and neuro-robotics. She is co-chair of the IEEE-RAS TC on Rehabilitation and Assistive Robotics.

Springer Handbook of Medical Technology

(Eds.) R. Kramme; K.-P. Hoffmann; R.S. Pozos

2012, XLVI, 1499 p. 1008 illus. in color., Hardcover

ISBN: 978-3-540-74657-7