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Chapter C.7, Sect. 7.5

Dr. Shuji Aihara is an expert in the field of welding metallurgy and fracture mechanics. He received awards from the Society of Naval Architects, Japan and the Institute of Steel and Iron, Japan for his achievements in the research of fracture mechanics and metallurgy of high-strength low-alloy welded structural steels.

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Chapter C.11, Sect. 11.7

Professor Tsutomu Araki received his Ph.D. degree in applied physics from Osaka University, Japan, in 1977. After being a post doctoral Fellow with the University of Wisconsin, Madison, he joined the faculty of the University of Tokushima, Japan and received the Ph.D. degree in medical sciences from the University of Tokushima in 1986. He is currently a Professor in the Department of Mechanical Sciences and Bioengineering of Osaka University. His research interests include development of a new biomedical and biophysical measurement systems using a fast pulse laser. He is a member of the Society for Applied Spectroscopy, the Optical Society of America, the Japan Society of Mechanical Engineering, and the Japan Society of Applied Physics.

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Chapter C.11, Sects. 11.1, 11.4

Professor Masaaki Ashida received the PhD degree in physics from Kyoto University, Japan, in 1994. He has worked on laser spectroscopy on solids. In 2003 he joined the department of Materials Engineering Science at Osaka University. His current interests are in ultrafast optical nonlinearity of strongly correlated electron systems and nanoscale materials. He recently developed an ultra broadband THz time-domain spectroscopy. He is a member of the Physical Society of Japan, the Japan Society of Applied Physics and the Optical Society of America.



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Chapter D.14, Sects. 14.1, 14.3, 14.5

Pete has been working since 1977 as an industrial microbiologist and is the Managing Director of IMSL, a specialised microbiological testing and consultancy service. As well as qualifications in microbiology, he is an Associate of the Oil and Colour Chemists Association and is a consultant to the OECD on treated articles and Secretary General of the International Biodeterioration Research Group.



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Chapter C.9, Sect. 9.4

Heinz-Gunter Bach received the M.S. degree in electrical engineering from TU Berlin, Germany. From 1978 to 1981 he was with the Hahn-Meitner-Institute Berlin working on the electrical characterization of BCCDs. He received the Ph.D. degree in 1982. In 1981 he joined the Heinrich-Hertz-Institut für Nachrichtentechnik Berlin GmbH heading the electrical characterization group within the photonics division. He was involved in III-V materials characterization, heterostructure analysis, and device optimization. Further he was engaged in project management of topics such as HEMT optimization, optoelectronic packaging and within the last 13 years on ultra-high-speed photodetector development and photoreceiver integration. He gives annual lectures at the Technical University on "optoelectronic semiconductor devices" and "measurement techniques for semiconductor devices". He is member of VDE, Elektrotechnischer Verein (ETV) e.V. / ITG and serves as a technical committee member of the international conference on Optical Fiber Communications.

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Chapter C.7, Sect. 7.3

Gun-Woong Bahng received his B.S. in 1976 from Seoul National University and his Ph.D. in 1982 from Northwestern University, Evanston. He is Chairman of the APEC network for Materials Properties Evaluation (2002-2006). His scientific work concentrates on mechanical behaviour of materials at low temperature, hardness standards, certified reference materials, the traceability and metrology of materials properties, and standard reference data. In 2004 he received the Science and Technology Medal from the Korean Government.

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Chapter D.16, Sect. 16.3

Claude Bathias is Professor “Classe Exceptionnelle” at the Conservatoire National des Arts et Métiers, School of Science and Technology for Engineering in Paris, France. He is Director of ITMA and Head of the MS Education (Materials Engineering). Professor Claude Bathias has dedicated his research career to the fracture of materials by fatigue in both of fundamental and technological aspects. Three periods can be distinguished in his activity: In the 1970ies he has worked about the modelling of fatigue crack growth and has displayed the mechanism of cyclic plastic deformation at the fatigue crack tip. In the 1980ies he applied fracture mechanics to the delamination of laminate composite materials and to the fatigue crack propagation in elastomers. Finally, in the 1990ies Professor Bathias and co-workers gave the experimental confirmation, for the first time, that all of the metals can fail in fatigue beyond the quadrillion of cycles range which is evidence of that the concept of infinite fatigue life does not exist.

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Chapter C.10, Sect. 10.4

Günther Bayreuther is Professor of Physics at the University of Regensburg and at the Max Planck Institute of Microstructure Physics in Halle/Germany. He has a long experience in magnetic films and surfaces. Current areas of research are ferromagnetic order and phase transitions in epitaxial nanostructures, spin-dependent transport phenomena in epitaxial metal-semiconductor layered structures, spin injection into semiconductors and ultrafast magnetization dynamics.

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Chapter D.16, Sect. 16.7

Bernd Bertsche studied Mechanical Engineering at the University of Stuttgart, Germany and received his academic degree Dipl.-Ing. in 1984. From 1984–1989, he was a Research Assistant in Reliability Engineering at the Institute of Machine Components and was conferred the academic degree Dr.-Ing. from the University of Stuttgart in 1989. From 1989–1992, he was a development engineer at Daimler-Benz AG in Stuttgart. His main projects were: development of automotive transmissions and four-wheel drive cars. From 1993–1996 he was a Professor in Mechanical Engineering at the University of Applied Science in Albstadt, Germany. Since 1996, he is a Professor of Mechanical Engineering at the Institute of Machine Components, University of Stuttgart, and Head of the Reliability Engineering Department. Since 2000, he also is Chief Executive Officer of the Technology Transfer Initiative GmbH of the University of Stuttgart. Since 2001, he is Head of the Institute of Machine Components.

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Chapter A.3, Sect. 3.6

Brian Brookman has over thirty years experience in analytical science, the past twenty years in the field of analytical quality, particularly concerned with reference materials and proficiency testing. Brian has been involved in various training and consultative projects concerned with developing proficiency testing in other countries and the accreditation of PT providers. He has been invited to lecture on proficiency testing at various events around the world. He is very active at the national, European and international level with respect to the development and harmonisation of good practice in proficiency testing. He is currently the Chair of the EURACHEM Proficiency Testing Working Group, Chair of the EA-EUROLAB-EURACHEM Joint Working Group on Proficiency Testing in Accreditation, Chair of the UK Working Group on Proficiency Testing and a member of the ILAC (International Laboratory Accreditation Cooperation) Proficiency Testing Consultative Group. He was a member of the ISO/CASCO Working Group which is developed the new ISO/IEC 17043 standard “Conformity assessment – General requirements for proficiency testing”

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Chapter C.8

Wolfgang Buck has 30 years of experience in metrological work gained at the Physikalisch Technische Bundesanstalt (PTB). Most of these years he worked in field of low-temperature physics and thermometry and in the development of the Provisional Low-Temperature Scale 2000. He made contributions to the planning and construction of highly magnetically shielded rooms and an low-energy electron storage ring for synchrotron radiation. In 2002 he became the Head of the Division “Temperature und and Synchrotron Radiation” and head of the Berlin Institute of PTB. After retirement he is now the Chairman of the Physical Society of Berlin.

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Chapter B.4

Richard R. Cavanagh earned his Ph.D. from Harvard University. He came to NIST in 1979 to pursue postdoctoral studies in the area of Surface Science. Since that time, he has published over 100 papers in the area of molecular processes at surfaces, incorporating measurement methods ranging from inelastic neutron scattering, picosecond and femtosecond lasers spectroscopy, and near-field optics. Dr. Cavanagh is the Chief of the Surface and Microanalysis Science Division, overseeing programs in microanalysis research, surface and interface research, and analytical microscopy. His Division provides the measurement science that underpins micro- and nanoscale chemical characterization of natural and man-made structures. Expertise in the Division spans electron microscopy, x-ray diffraction and fluorescence, SIMS, Raman, IR, NLO, scanned probes, optical microscopy, and AES.

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Chapter B.6

Leonardo De Chiffre is an internationally recognized expert in manufacturing and metrology. He has created and directed since its formation the Centre for Geometrical Metrology at the Technical University of Denmark which is part of the Danish Primary Laboratory for Length. Professor De Chiffre is active member of CIRP, panel member of the Foundation Committee of Euspen, and Associate Editor of Precision Engineering.

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Chapter B.4, Sect. 4.1

Steven Choquette is a Research Chemist at the National Institute of Standards and Technology, Gaithersburg, Maryland. He has been employed in the Analytical Chemistry Division since 1987. His current research interests are in the development of performance validation standards for Near Infrared and Raman spectroscopy. He is a member of several ASTM committees and currently serves as the vice-chair of ASTM E 13.08 committee on Raman Spectroscopy. He obtained a Ph.D. in analytical chemistry in 1987 at the Virginia Polytechnical Institute and State University, Blacksburg, VA. His B.S. degree in Chemistry and Electrical Engineering was obtained from Santa Clara University, in Santa Clara, CA in 1980.

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Chapters A.1, A.3, Sects. 3.4, 3.10

Horst Czichos has been President of BAM, the German Federal Institute for Materials Research and Testing (1992–2002) and President of EUROLAB, the European Federation of National Associations of Measurement, Testing and Analytical Laboratories (1999–2003). He holds degrees in precision engineering, physics and materials science from the Free University and the Technical University of Berlin, and obtained a Dr. h.c. from KU Leuven University for his research work in tribology. He is currently Professor of Mechatronics at the University of Applied Sciences, BHT Berlin, and received 2007 the Beuth Award for achievement in engineering education.

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Chapter D.16, Sect. 16.6

Dr. Werner Daum studied electrical engineering with a major in measuring techniques at the Technical University of Berlin. Upon graduation in 1984 he entered Federal Institute for Materials Research and Testing (BAM). Until 1989 his main activity was R&D in the field of non-destructive testing with special focus on digital image processing and radioscopes. In 1989 he became head of the laboratory for optical measuring methods and experimental stress analysis and commenced with the development of optical NDT methods. In 1994 he received his PhD. from the Technical University of Berlin. In 1996 he became a Director and Professor at BAM and head of the division Measurement and Testing Technology; Sensors. The emphasis of his work is the development of sensor technology to be embedded into materials and structures, of fiber-optic sensors, and of sensor technology for smart structures and materials. Since 1999 he is chairman of the German Society of Experimental Structure Analysis (GESA).

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Chapter B.4, Sect. 4.1

Paul DeRose is a physical/analytical chemist who came to NIST as a National Research Council Postdoctoral Fellow in 1996. Before coming to NIST, he earned his Ph.D. in chemistry from the University of Pennsylvania where he studied laser spectroscopy and excited-state dynamics. His current research interests concern the development of fluorescence standards and methods for validation of chemical and clinical assays.

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Chapter A.3, Sect. 3.3

Dr. Ellison is head of the Bioinformatics and Statistics section at LGC. Originally qualified as a chemist, his research and application interests include statistics, chemometrics and computing applied to chemical and biological measurement. He is a recognised international expert in measurement uncertainty and traceability for analytical methods, and has contributed to a range of national and international committees and guidance documents in that field.

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Chapter D.16, Sect. 16.1

Prof. Dr.-Ing. Anton Erhard studied metal physics at the Technical University Berlin. Since 1976 he is employed at the Bundesanstalt für Materialforschung und -prüfung (BAM) Berlin. His scientific work was honored with two awards; 1984 from the German Society of Non-Destructive Testing (DGZfP) and 1985 from the American Society for Nondestructive Testing (ASNT). His scientific results are presented in more than 200 publications.

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Chapter D.16, Sect. 16.2

Dr. Uwe Ewert is Director and Professor of the division Radiology in the Department Non-destructive Testing of BAM, the Federal Institute for Materials Research and Testing. He received his Ph.D. from the Humboldt-University in Berlin on calculations of electron spin resonance (ESR) spectra of metal complex compounds. He developed tomography systems at the centre of scientific instruments in Berlin-Adlershof up to 1990 and developed pulsed ESR tomography methods at the Cornell University in New York State. Since 1992 he is engaged at BAM in material characterisation, new intelligent testing methods of industrial components and their standardization. He is chairman of the radiology committee of the German Society of NDT since 1997.

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Chapter C.7, Sect. 7.2

Richard J. Fields is a Ph.D. metallurgist and has worked at the National Institute of Standards and Technology and the National Bureau of Standards for the past 27 years, supervising groups of scientists doing research in metal forming, nanolaminates, and powder metallurgy. His group also certifies the U.S. national standards for Rockwell B and C hardness scales.

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David Flaschenträger studied Mechanical Engineering in Darmstadt, Germany and obtained his Master of Science degree in 2008. Since then David Flaschenträger is with the Fraunhofer Institute for Structural Durability and System Reliability (LBF) performing research on the reliability assessment of complex adaptive and mechatronic systems.

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Chapter C.7, Sect. 7.6

Dr. Freeman's research is mass transport of small molecules in polymers. He directs 15 PhD students and 3 postdoctoral fellows performing fundamental research in gas and liquid separations using polymer membranes and barrier packaging. Current topics include vapor separation materials, new materials for hydrogen separation, natural gas purification, and water desalination as well as reactive barrier packaging, and new materials for improving fouling resistance in liquid separations.

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After his graduation in Materials Science and Engineering at the Technical University in Braunschweig, he received his Ph.D. degree in Material Science from the Technical University Berlin. Between 1987 and 1997 he was head of a laboratory for mechanical testing at the Federal Institut for Materials Research and Testing (BAM). His main focus is on quality management systems in testing laboratories, the production of metallic reference materials, and the organization of proficiency tests. He is managing director of the Institut for Proficiency Testing, Marl, Member of the Board of EUROLAB-Germany, and currently Chair of the Technical Committee for Materials Testing of the German Accreditation Body DAkkS. Since 1997 Holger Frenz is Professor for Materials Testing at University of Applied Sciences, FH Gelsenkirchen.

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Jochen Gäng studied Mechanical Engineering in Stuttgart, Germany and obtained his Diploma degree in 2006. Afterwards Mr. Gäng was a scientific researcher in the field of reliability of mechatronics in early phases of development at the Institute of Machine Components, University of Stuttgart. Since 2010 Mr. Gäng works at JHP, a consulting association for product reliability.

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Dr. Anja Geburtig studied physics at the Humboldt University in Berlin and received her PhD in 2002 at the Technical University of Berlin investigating plastic deformation of alloys with means of optical surface techniques. Since 2002 she has been working on weathering of polymers at the Federal Institute for Materials Research and Testing.

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Mark Gee is an NPL Fellow in the Materials Division at the National Physical Laboratory. He manages projects which are concerned with the development of an improved infrastructure for friction and wear testing in the UK. Particular research interests are the mechanisms of abrasive wear for ceramics and other hard materials. He has published over 200 papers and reports. He has recently been Chairman of the Institute of Physics Tribology Group, and is now Secretary of the Surface Engineering Division Board and the Coatings and Surface Treatments Committees of the Institute of Materials, Mining and Minerals. He is also a member of the International Advisory Editorial Board of Tribology International. He is a member of ASTM Committee G2 on Wear, and represents the UK on standards committees CEN 352 Nanotechnologies, ISO TC 206 Fine Ceramics, and ISO TC 229 Nanotechnologies.

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Dr. Jürgen Goebbels received his Ph.D. from the Technical University Karlsruhe in 1976 on Surface resistance of amorphous superconducting films. He has worked for six years in the field of low-temperature solid-state physics and nuclear magnetic resonance (NMR) at the Karlsruhe Nuclear Research Centre and at the Free University Berlin. Since 1982 he is at the Federal Institute for Materials Research and Testing (BAM) and is at present head of the working group 'Computed tomography'. Since the foundation 1987 he is chairman of the subcommittee 'Computed Tomography' of the German Society of Non-destructive Testing (DGZfP).

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Manfred Golze has a diploma and a PhD in chemistry from the Free University Berlin. He did research at the Fritz-Haber-Institute of the Max-Planck-Society and the FU Berlin in the field of surface analysis. Since 1987 he is with the BAM Federal Institute for Materials Research and Testing, since 1992 head of the section Quality in Testing. Current interest is focussed on conformity assessment and technical issues of quality assurance in testing.

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Anna Gorbushina studied Biology, Material Sciences and Physics at St. Petersburg University. She received her Ph.D. from Komarov Institute, Russian Academy of Sciences. Professor Gorbushina is teaching materials science and microbiology at the Applied University Cologne and mycology and landscape ecology (architectural ecology) at Oldenburg University. She is working on biodeterioration by and molecular ecology of micromycetes (lower fungi). She is a member of International Board of Environmental Biogeochemistry. Since April 2009 she is professor at the Free University of Berlin and Head of Department 4 Materials and Environment of BAM Federal Institute for Materials Research and Testing.

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Dr. Greenberg has been a Research Chemist at NBS/NIST since 1976, and the Group/Team Leader of the Nuclear Methods Group/Team since 1989. His research has focused on the development and application of high-accuracy nuclear and radioanalytical chemistry methods for elemental analysis, the development of complete uncertainty budgets for the nuclear analytical chemistry methods, and the establishment of quality assurance procedures.

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Diplom Holzwirt Manfred Grinda studied wood science and technology at the University of Hamburg. He was the head of the project group "Reliability and Resistance of Materials to Biodeterioration at the Federal Institute for Materials Research and Testing (BAM)". Until his retirement he was a member of several working groups of CEN/TC 38 "Durability of Wood and Derived Materials". His main interests are the methodology of meaningful materials testing against wood destroying fungi.

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Chapter C.10, Sect. 10.3

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Roland Grössinger studied Technical Physics at the Technical University in Vienna where he received the title Diplom Ingenieur. During his employment at the Institute of Experimental Physics at the Technical University Vienna he received the Doctor for Technical Sciences in 1975. In 1983 he graduated as "Dozent" for Experimental Metal Physics, and was awarded the Planseepreis for the industrial development of a magnet key in 1985. In 1993 he was awarded the title Universitäts Professor. He has more than 400 publications in international journals and gave more than 500 talks and presentations at international conferences. His research interests are physical properties of magnetic materials and physics and technology of high magnetic fields and their measurement methods.

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Chapter C.7, Sect. 7.5

Professor Yukito Hagihara's main area of research is the fracture of steel and the integrity of welded structures based on fracture mechanics. He received his Dr. Eng. from the University of Tokyo in 1973. He worked at the Nippon Steel Corporation for 28 years (1973–2001) and at the National Institute for Materials Science for 3 years (2001–2004), where he was engaged in the ultra-steel project.

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Chapter C.7, Sect. 7.3

Junhee Hahn's research fields are the synthesis of nanostructured thin films, the assessment of mechanical reliability of nanostructured materials and standardizing test methods. His current research activities comprise the development of atomic force acoustic microscopy (AFAM) technique to determine local elastic properties of multiple materials integrated on the sub micrometer scale. He participates in standardizing the instrumental indentation test method and prepared the first draft of nanoindentation standard.

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Holger Hanselka studied general machine engineering at the Technical University of Clausthal and worked as Scientific Assistant at the German Centre 01' Aviation and Spare Travel in Braunschweig. In 1992 he graduated with a PhD from TU Clausthal. In 1997, he was called to lecture at the Otto-von-Guericke University of Magdeburg; Hanselka held the Chair of Adaptronics and was head of the work group Experimental Mechanics. Since 2001 he is Head of the Fraunhofer-Institute of Structural Durability and System Reliability (LBF) in Darmstadt and holds the Chair for System reliability and Machine Acoustics at the University of Technology in Darmstadt, of which he is Vice-President. He is Head of the Fraunhofer-Alliance "Materials" and member of the board of the Fraunhofer-Gesellschaft. Professor Hanselka coordinates several large-scale projects such as the Collaborative Research Center SFB 805, the LOEWE-Center AdRIA as well as System Research on Electromobility.

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Chapter A.3, Sect. 3.8

Werner Hässelbarth is a chemist with strong influences from theoretical physics and mathematics. His university research career (15 years) was focussed on theoretical and physical chemistry. Later he worked at Federal Institute for Materials Research and Testing (BAM) in different areas including chemical safety, gas analysis and quality management. Having retired in 2007, he is still active in dedicated scientific fields, especially in measurement uncertainty.

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Chapter A.3, Sect. 3.7

Martina Hedrich has majored in chemistry and received her PhD degree from Berlin Free University (FUB). Her areas of competence include analytical chemistry, quality management, metrology in chemistry and reference materials (RM). Joining BAM in 1989 she has been the head of working groups characterizing RM with nuclear techniques, gas analysis and metrology. Currently, she is BAM Quality Manager, lecturer at FUB, involved in education and training programmes (TrainMiC, EURACHEM) and convener of BAM's Certification Committee for RM.

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Dr. Manfred P. Hentschel is manager of working group “X-Ray Scattering Topography” at Federal Institute for Materials Research and Testing (BAM) and Professor at the Technical University Berlin. He received his Ph.D. in physics from the Free University of Berlin. For developing new imaging and computed tomography techniques of x-ray scattering he was awarded the Roentgen Plaque in 2000. He is co-editor of RNDE and “Materialprüfung/Materials Testing”.

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Horst Hertel is biologist with a Ph.D. in Natural Sciences. He is lecturer at the Institute of Neurobiology, Free University of Berlin and , Head of Division Biology in Materials Protection and Environmental Issues” at the Federal Institute for Materials Research and Testing (BAM). His main interests are in materials protection against wood destroying insects on a biological basis.

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Xiao Hu got his PhD degree from the University of Tokyo (1990). He was a Research Associate and Associate Professor at the Institute for Material Research, Tohoku University (1991–1995); Senior Scientist, Group Director at the National Institute for Materials Science (NIMS) (1995–2007). Now he is a PI at the WPI Center for Materials Nanoarchitectonics (MANA-NIMS), and since 2007 a Professor at the University of Tsukuba. His major interest is in theory of condensed matter and computer simulation in materials science. His current research interests cover the vortex states in type-II superconductors, terahertz electromagnetic radiation based on Josephson effects, and theoretical design of novel spintronics materials.

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Currently Professor of Manufacturing Engineering at the University of Cambridge, Ian Hutchings is also Editor-in-Chief of the journal *Wear*, and has research interests in the tribological behavior of materials, surface engineering, and manufacturing processes for all classes of materials. He is a Fellow of the Royal Academy of Engineering and holds the Tribology Trust Silver Medal (1994), the NPL Award for Materials Metrology (2000) and the Staudinger-Durrer Prize from ETH Zürich (2007).

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Shoji Imatani started his research on inelastic constitutive modeling and finite element simulation in the middle of 1980's. His current interest is in the field of nonlinear continuum mechanics, particularly in material inhomogeneity and macro/micro-combined analysis of inelastic materials.

**Hanspeter Ischi**

Chapter A.3, Sects. 3.2, 3.9, 3.11

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After his graduation as an analytical chemist Hanspeter Ischi worked in the chemical industry in the field of quality control. In this function he gained first experience in establishing industrial quality management systems and quality assurance in analytical chemistry already in 1980. Afterwards he continuously improved his knowledge in modern management systems including development of staff in the area of communication, leadership, organization and conflict management, as well as in quality assurance in testing. He is the head of the Swiss Accreditation Service since 1991 and presently a member of the Executive Committee of the European Cooperation for Accreditation (EA). For several years he was also member of the Executive committee of the International Laboratory Accreditation Cooperation (ILAC) and he is one of the past chairmen of the laboratory committee of EA.

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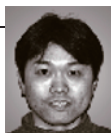
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Chapter D.14, Sect. 14.4

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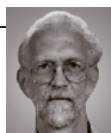
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Chapter B.5

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After studies in chemistry and biology from 1969–1975 Dr. Osterloh received his Ph.D. in 1979. He did post-doctoral research in Munich (Germany) from 1980–1984, in Harrow/London (UK) from 1984–1986, in Mobile AL (USA) from 1986–1987, in New York NY (USA) 1987–1989, again in Munich (Germany) from 1989–1990, he spent the years from 1990–1994 in pharmaceutical industry in Berlin (Germany). After 5 years research at the Free University of Berlin (1995–2000) and development of ESR spectrometry at Magnetech in Berlin (1995–2000) he joined the Federal Institute for Materials Research and Testing (BAM) in 2000 working on radiology in safety and security applications.

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Chapter D.13

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Dr. Simon studied chemistry in Frankfurt/Main (Diploma 1985) and Mainz (PhD 1989), Germany and gained a master's degree in business engineering (AKAD Zurich, Switzerland 1997). He joined the Federal Institute for Materials Research and Testing (BAM) as Head of Division in 1998 after working for eight years in an industrial research centre in Switzerland. His scientific activities encompass research on thermal waste treatment, groundwater remediation and ecomaterials.

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Chapter C.9, Sect. 9.3

The emphasis of Ms. Spitzer's work is the development and application of primary electrochemical methods. She is head of the working group "Metrology in Electrochemistry" at the Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany. By education Ms. Spitzer is a physical chemist and received her diploma as chemist from the Humboldt University in Berlin, Germany. Before 1991 she worked on electrochemistry and adsorption at the Central Institute of Physical Chemistry, former Academy of Science.

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Chapter A.3, Sect. 3.8

Thomas Steiger studied Chemistry at the University of Leipzig focusing on theoretical and quantum chemistry. He received a PhD degree from the Academy of Sciences of GDR, Berlin in 1977 on the application of quantum chemical methods for interpretation of NMR and vibrational spectra. Since 1992 he has been working at BAM Federal Institute for Materials Research and Testing in the field of analytical chemistry and related reference materials. Currently, his special interests are quality assurance and metrology in analytical chemistry.

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Chapter D.14, Sect. 14.2

Dr. Ina Stephan has a Ph.D. in Wood Science and Technology from the University of Hamburg, Germany and is head of the working group on the resistance of materials to microorganisms at the Federal Institute for Materials Research and Testing (BAM). Her main interests are in the testing of materials against fungi, algae and bacteria in a meaningful manner and the international harmonization of test standards for biodeterioration.

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Stephan Stranick received a PhD in Chemistry from the Pennsylvania State University in 1995. Stephan is currently a Research Chemist in the Chemical Science and Technology Laboratory of the National Institute of Standards and Technology, where his present research focuses on the development of novel super-resolution probes of surface physiochemical properties. He has published over sixty papers on the subject and has been awarded fourteen patents associated with scanning probe microscopies for chemical and electrical characterization. Stephan's awards include the American Chemical Society's Nobel Laureate Signature Award and Arthur F. Findeis Award.

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Dr. Hans-Henning Strehblow is Professor of Physical Chemistry at the Heinrich-Heine-Universität, Düsseldorf, Germany since July 1982. He studied Chemistry at Freie Universität, Berlin (1959–1964) where he also earned his Ph.D. in Physical Chemistry (1971) as well as his State Doctorate in Physical Chemistry (1977). He is Fellow of the Electrochemical Society since 2005. His professional interests are electrochemistry, corrosion, surface analysis and physical chemistry of surfaces.

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Professor Yo Tomota's current research topics include neutron diffraction studies of phase transformation, microstructural evolution and mechanical behavior of ecomaterials. The development of environmentally conscious materials, so called ecomaterials are his concern for realizing a sustainable human society. Therefore, Professor Tomota is studying material flow and recycling, ecomaterials, mainly steels design etc. Nanostructure analysis using neutron diffraction is a powerful tool to develop nanocrystalline ecomaterials and to study the deformation and fracture of materials.

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John Travis joined NBS/NIST after earning his Ph.D. in physics from the University of Texas in 1967. His research generated over 85 papers in Mössbauer spectroscopy, applications of tunable lasers to chemical analysis, Fourier transform spectroscopy, atomic emission and molecular absorption spectrometry. He retired in October of 2004, becoming an Emeritus Scientist pursuing intrinsic standards for molecular absorption spectrometry.

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Peter Trubiroha studied Physics at the Freie Universität Berlin. From 1970 until 2003 he was with the Federal Institute of Material Research and Testing (BAM), Berlin, Germany. His area of work was the climatic resistance of polymeric materials especially studies on the influence of different climatic quantities on photo degradation and to develop new test procedures.

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Dr. Gregory C. Turk is leader of the Inorganic Chemical Metrology Group at the National Institute of Standards and Technology, where he has worked in the area of spectrochemistry since 1976. His research background includes the use of laser spectroscopy for trace metal analysis, including the development of Laser Enhanced Ionization Spectrometry. Present research includes the development of improved strategies for instrument calibration in spectrochemical analysis. He received his Ph.D. degree from the University of Maryland.

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Thomas Vetter is an inorganic analytical chemist at NIST. Over the past 25 years at NIST he has assayed major constituents in numerous Standard Reference Materials by gravimetry coupled with instrumental techniques and by gravimetric titrimetry. In addition, over the past 15 years, he has promoted a step-wise quantification of measurement uncertainty to improve measurement quality.

**Volker Wachtendorf**

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Volker Wachtendorf obtained his diploma in chemistry from the Technical University of Clausthal, Germany, where he also achieved his doctor's degree with a thesis on the monitoring of the ageing of polymers using chemiluminescence. The practical part of his thesis already was done at the Federal Institute for Materials Research and Testing (BAM) in Berlin, Germany, where he currently heads the working group Weathering Stability of Polymers. His interests are in the fields of weathering exposure, ageing of polymers and its analytics in early stages of exposure.

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Professor Wallard has been Director of the International Bureau of Weights and Measures (BIPM) since January 2004. The BIPM's task is to ensure uniformity of measurements world-wide and has interests in physics, engineering, chemistry, laboratory medicine and other areas in which traceable measurement is important. Professor Andrew Wallard has left the BIPM as of 31 December 2010, and is now Director Emeritus of the BIPM.

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Chapter C.10, Sect. 10.1

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Wolfhard Wegscheider is Professor of General and Analytical Chemistry at the University of Leoben, Austria. He received his education from the Graz University of Technology majoring in Technical Chemistry with a specialisation in Biochemistry and Food Chemistry. As Fulbright Scholar he worked in Denver, CO, mainly on energy-dispersive x-ray fluorescence spectrometry. Much of his research centers on the development of chemometric procedures for analytical chemical problems. Professor Wegscheider is member of several learned societies, past chairman of CITAC and EURACHEM, has cooperation on International Traceability in Analytical Chemistry, Austrian Delegate to EURACHEM where he is member of the Executive Committee, of the Working Group on Education and Training, of the Working Group on Measurement Uncertainty and Traceability, and of the Working Group Analytical Quality Assurance at Universities. Currently he serves as Vice-President of the Austrian Society of Analytical Chemistry – ASAC. He is a consultant to the Austrian Federal Ministry for Agriculture, Forestry, Environment and Water Management and a lead auditor in the Austrian Accreditation of Laboratories.

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Alois Wehrstedt studied materials science at the Technical University Dresden, Germany. He is manager of the department for materials testing at the Central Institute for Solid State Physics and Material Science in Dresden. Since 1989 he worked in the Standardization Committee for Materials Testing (NMP) of the German Institute for Standardization in Berlin for which he is the manager since 2005. Since 1994 he is the secretary of the international standardization committee ISO/TC 164/SC 3 Hardness Testing of Metallic Materials.

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Chapter B.4, Sect. 4.1

Dr. Welch received a Ph.D. in analytical chemistry from Arizona State University in 1976 and has been at the National Institute of Standards and Technology since 1978. His research interests focus on development of mass spectrometry based reference methods and standard reference materials for organic analytes in blood, drugs of abuse in urine, hair, and other matrices, and nutrients in foods.

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Sheldon M. Wiederhorn received his B.S. degree in 1956 from Columbia University and his Ph.D. degree in 1960 from the University of Illinois. He joined the National Institute of Standards and Technology in 1963, where he developed methods for quantifying subcritical crack growth in glasses and ceramics. He was elected a member of the National Academy of Engineering in 1991.

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Chapter B.4, Sect. 4.1

Dr. Michael Winchester has been a Research Chemist at NIST for over twenty years (first two years as a National Research Council Postdoctoral Fellow). His research focuses mainly on plasma source atomic spectroscopy. He is also involved in the production and certification of Standard Reference Materials. Dr. Winchester earned the PhD in Analytical Chemistry from Clemson University in 1990.

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Chapter C.11, Sect. 11.6

Dr. Noboru Yamada graduated from Kyoto University and entered the Central Research Laboratory of Matsushita Electric in 1974. He first found an epoch-making phase-change in GeTe-Sb₂Te₃ in 1987 and developed DVD-RAM media in 1998. He obtained his Ph.D. in engineering from Kyoto University in 2001 and received the Matsushita science prize in 2001 and 24th JJAP Paper Award from the Japan Applied Physics Society in 2002.

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Chapter B.4, Sect. 4.1

Dr. Rolf Zeisler joined NIST in 1978 with his degree from the Technical University, Munich, Germany (1974) on instrumental neutron activation analyses of tissues and their application to investigations of metallosis. Activation analysis formed the core of his research, expanding the technique's applications in the life sciences and in chemical metrology. Post doctoral studies at Texas A&M University, assignment to the IAEA Laboratories, Austria, and many collaborations allowed him to explore the various forms of nuclear based analysis.

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Chapter D.16, Sect. 16.2

Dr. Uwe Zscherpel received his Ph.D. from the University of Leipzig, Germany, on Fourier transform infrared spectroscopy of zeolites. In 1992 he changed to non-destructive testing and since 1996 he is head of the working group "Digital Radiology and Image Analysis" at the Federal Institute for Materials Research and Testing (BAM), Berlin, Germany. His area of expertise is digital image processing in industrial radiology, including NDT film digitization, digital image analysis, pattern recognition and digital reference catalogues for weldings and castings. Additional working fields are new radiographic image detectors such as imaging plates and digital detector arrays for industrial applications, standardization and reliability.

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Chapter A.3, Sect. 3.7

Adolf Zschunke was head of the department Analytical Chemistry; Reference Materials at the Federal Institute for Materials Research and Testing (BAM) and Professor of Analytical Chemistry at the Humboldt-University in Berlin, Germany. He was chairman of the international working group on Reference Materials of EURACHEM, EUROLAB, EUROMET and EA. He retired in 2002. He is still member of Executive Committee of EURACHEM.

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