

Scanning Probe Methods Group, Prof. Dr. Roland Wiesendanger

Publications: Book Contributions and Review Articles

Date of issue: 2026-04-14

Book Contributions

Magnetic Skyrmions on Discrete Lattices

Y. Vedmedenko and R. Wiesendanger, in:

Handbook of Spin Transport and Magnetism, 2nd edition (ed. by E. Y. Tsybal and I. Zutic), CRC Press, Taylor & Francis (2019)

Magnetic spectroscopy of individual atoms, chains and nanostructures

J. Wiebe, A.A. Khajetoorians, and R. Wiesendanger, in:

Atomic- and Nano-Scale Magnetism (ed. by and R. Wiesendanger), Springer Nature Switzerland (2018), p.3

Non-collinear magnetism studied by spin-polarized scanning tunneling microscopy

K. von Bergmann, A. Kubetzka, O. Pietzsch, and R. Wiesendanger, in:

Atomic- and Nano-Scale Magnetism (ed. by R. Wiesendanger), Springer Nature Switzerland (2018), p.163

Magnetization dynamics on the atomic scale

S. Krause and R. Wiesendanger, in:

Atomic- and Nano-Scale Magnetism (ed. by R. Wiesendanger), Springer Nature Switzerland (2018), p.221

Atomic-Scale Spintronics

J. Brede, B. Chilian, A. A. Khajetoorians, J. Wiebe, and R. Wiesendanger, in:

Handbook of Spintronics (ed. by Y. Xu, D. Awschalom, and J. Nitta), Springer (2016), p.757

Quasicrystals: Magnetism

E. Y. Vedmedenko, in:

Reference Module in Materials Science and Materials Engineering Update of Encyclopedia of Materials: Science and Technology (Second Edition), 2015 (ed. by S. Hashmi), Elsevier (2016), p.1-5

Nanotechnologie in Hamburg: neue Impulse für die Datenspeicherung der Zukunft

H. Fuchs and R. Wiesendanger, in:

Wirtschaftsstandort Hamburg / Schleswig-Holstein, Europäischer Wirtschafts-Verlag (2016), p.130

Magnetic Exchange Force Spectroscopy

A. Schwarz and S. Heinze, in:

Non-Contact Atomic Force Microscopy Vol. 3 (ed. by S. Morita, F. J. Giessibl, E. Meyer, and R. Wiesendanger), Springer (2015), p.111

Imaging Molecules on Bulk Insulators Using Metallic Tips

D. Z. Gao, A. Schwarz and A. L. Shluger, in:

Non-Contact Atomic Force Microscopy Vol. 3 (ed. by S. Morita, F. J. Giessibl, E. Meyer, and R. Wiesendanger), Springer (2015), p.355

Revealing Subsurface Vibrational Modes by Atomic-Resolution Damping Force Spectroscopy

M. Ashino and R. Wiesendanger, in:

Non-Contact Atomic Force Microscopy Vol. 3 (ed. by S. Morita, F. J. Giessibl, E. Meyer, and R. Wiesendanger), Springer (2015), p.127

Atomic Scale Magnetism Studied by Spin-Polarized Scanning Tunneling Microscopy

Oswald Pietzsch and Roland Wiesendanger, in:

Fundamentals of Picoscience (ed. by Klaus D. Sattler), CRC Press (2013), p.413-445

Spin-Polarized STM and Atomic-Scale Spintronics

J. Brede, B. Chilian, A. A. Khajetoorians, J. Wiebe, and R. Wiesendanger, in:

Handbook of Spintronics (ed. by D. Awschalom, J. Nitta, and Y. Xu), Canopus Academic Publishing and Springer (2012)

Magnetic Sensitive Scanning Tunneling Microscopy

Kirsten von Bergmann, André Kubetzka, in:

Characterization of Materials (ed. by Elton N. Kaufmann), John Wiley and Sons (2012), p.2280

Scanning tunneling spectroscopy on III-V materials: Effects of dimensionality, magnetic field, and magnetic impurities

M. Morgenstern, J. Wiebe, F. Marczinowski, and R. Wiesendanger, in:
Quantum Materials (ed. by D. Heitmann), Springer (2010)

Scanning tunneling spectroscopy of semiconductor quantum dots and nanocrystals

G. Maruccio and R. Wiesendanger, in:
Quantum Materials (ed. by D. Heitmann), Springer (2010)

Low temperature scanning probe microscopy

M. Morgenstern, A. Schwarz, U. D. Schwarz, in:
Springer Handbook of Nanotechnology, 3rd Ed. (ed. by B. Bushan), Springer-Verlag Berlin Heidelberg (2010), p.663

Magnetic Exchange Force Microscopy

A. Schwarz, U. Kaiser, R. Schmidt, and R. Wiesendanger, in:
Noncontact Atomic Force Microscopy, 2nd Ed. (ed. by S. Morita, F. J. Giessibl, R. Wiesendanger), Springer-Verlag Berlin Heidelberg (2009), p.275

Low Temperature Scanning Probe Microscopy

M. Morgenstern, A. Schwarz, and U. D. Schwarz, in:
Springer Handbook of Nanotechnology (ed. by B. Bhushan), Springer Verlag (2007), p.679

Anisotropic Domain Walls in Magnetic Nanostructures with Perpendicular Anisotropy

E. Y. Vedmedenko and R. Wiesendanger, in:
New Topics in Condensed Matter Research (ed. by John V. Chang), Nova Publishers, New York (2006)

Magnetic ordering of the Spin Reorientation Transition in Nanostructures

E. Y. Vedmedenko, in:
Magnetism of Surfaces and Nanostructures (ed. by A. Ghazali, and J. C. S. Levy), Transworld Research, Kerala (in press) (2006)

Scanning Probe Techniques: MFM and SP-STM

A. Schwarz, M. Bode, and R. Wiesendanger, in:
Handbook of Magnetism, Vol. 3 (ed. by H. Kronmüller and S. S. P. Parkin), Wiley (2006)

Spin-Polarized Scanning Tunneling Spectroscopy

M. Bode and R. Wiesendanger, in:
Magnetic Microscopy of Nanostructures (ed. by H. Hopster and H. P. Oepen), Springer Berlin, Heidelberg (2005)

Spin-Polarized Scanning Tunneling Microscopy

M. Bode, O. Pietzsch, A. Kubetzka, and R. Wiesendanger, in:
Modern Techniques for Characterizing Magnetic Materials (ed. by Y. Zhu), Springer, Berlin (2005)

Nanotechnologie - Aufbruch in neue Welten

R. Wiesendanger, in:
Leopoldina Reihe 3, Jahrgang 50, Jahrbuch 2004, Halle/Saale (2005), p.369

Quasicrystals: Magnetism

E. Y. Vedmedenko, in:
Encyclopedia of Materials: Science and Technology Updates, Elsevier, Oxford (2004)

Scanning Tunneling Spectroscopy: Local Density of States and Spin Distribution of Interacting Electron Systems

M. Morgenstern, in:
Scanning Probe Microscopy: Characterization, Nanofabrication and Device Application of Functional Materials (ed. by P. Vilarinho), NATO ASI Series (2004)

Low temperature scanning probe microscopy

M. Morgenstern, A. Schwarz, U. D. Schwarz, in:
Nanotribology and Nanomechanics (ed. by B. Bushan), Springer Berlin, Heidelberg, New York (2004), p.185

Low-Temperature Measurements: Principles, Instrumentation, and Application

W. Allers, A. Schwarz, U. D. Schwarz, in:
Noncontact Atomic Force Microscopy (ed. by S. Morita, R. Wiesendanger, and E. Meyer), Springer Berlin, Heidelberg, New York (2002), p.233

Investigation of the mechanics of nanocontacts using a vibrating cantilever technique

U. D. Schwarz, H. Hölscher, W. Allers, A. Schwarz, and R. Wiesendanger, in:

Fundamentals of tribology and bridging the gap between macro- and micro/nanoscale tribology, NATO ASI Series E: Appl. Phys. (ed. by B. Bushan), Kluwer Academic Publishers, Dordrecht, The Netherlands (2001)

Atomic-scale friction studies using scanning force microscopy

U. D. Schwarz and H. Hölscher, in:

CRC handbook of modern tribology, 1st edition, CRC Press, Inc., Boca Raton, FL. (2001)

Faszinierende Einblicke in den Nanokosmos

K. Schoepe and R. Wiesendanger, in:

... und Er würfelt doch! (ed. by H. Müller-Krumbhaar, H. F. Wagner), Wiley-VCH, Berlin (2001), p.521

Quasicrystals: Magnetism

E. Y. Vedmedenko, in:

Encyclopedia of Materials: Science and Technology (ed. by K. H. Jürgen Buschow, Robert W. Cahn, Merton C. Flemings, Bernard Ilshner, Edward J. Kramer, Subhash Mahajan, and Patrick Veyssi re), Elsevier Oxford (2001), p.1

Industrial Application of Scanning Probe Microscopy

A. Born, in:

Encyclopedia of Analytical Chemistry: Instrumentation and Application (ed. by R. A. Meyers et al.), John Wiley & Sons Ltd., Chichester (2000)

Proximal Probe Techniques

R. Wiesendanger, in:

Encyclopedia of Analytical Chemistry: Instrumentation and Application (ed. by R.A. Meyers et al.), John Wiley & Sons Ltd., Chichester (2000), p.9232

Rastersondenmethoden und Datenspeichetechnik

A. Born and R. Wiesendanger, in:

Bericht zum 152. PTB-Seminar (ed. by M. Albrecht) (2000)

Low temperature scanning probe microscopy

M. Morgenstern, A. Schwarz, U. D. Schwarz, in:

Springer Handbook of Nanotechnology (ed. by B. Bushan), Springer (2000), p.413

Nanostrukturierung und Charakterisierung von magnetischen Materialien

A. Born, M. Kleiber, G. Meier, D. Heitmann, and R. Wiesendanger, in:

Werkstoffe f ur die Informationstechnik (ed. by K. Kempfer und J. Hau elt), Wiley-VCH, Weinheim (1999), p.155

Introduction to Analytical Methods in SPM

R. Wiesendanger, in:

Analytical Methods in Scanning Probe Microscopy, Springer Series in Nano Science and Technology, Springer Berlin, Heidelberg, New York (1998), p.1

Spin-Polarized Scanning Tunneling Microscopy

R. Wiesendanger, in:

Analytical Methods in Scanning Probe Microscopy, Springer Series in Nano Science and Technology, Springer Berlin, Heidelberg, New York (1998), p.71

Mechanical Surface Modification

R. Wiesendanger, in:

Procedures in Scanning Probe Microscopies (ed. by R. Colton, A. Engel, J. Frommer, H. Gaub, A. Gewirth, R. Guckenberger, W. Heckl, B. Parkinson, and J. Rabe), John Wiley & Sons Ltd. (1998), p.555

Thermal Surface Modification

R. Wiesendanger, in:

Procedures in Scanning Probe Microscopies (ed. by R. Colton, A. Engel, J. Frommer, H. Gaub, A. Gewirth, R. Guckenberger, W. Heckl, B. Parkinson, and J. Rabe), John Wiley & Sons Ltd. (1998), p.558

Surface Electronic Structure of Gd(0001): Studies on the Thickness and Temperature Dependence of the Exchange Splitting

M. Bode, M. Getzlaff, R. Pascal, S. Heinze, and R. Wiesendanger, in:

Magnetism and Electronic Correlations in Local-Moment Systems (ed. by M. Donath, P.A. Dowben, and W. Nolting), World Scientific, Singapore (1998), p.235

Scanning Tunneling Microscopy

R. Wiesendanger, in:

Handbook of Microscopy (ed. by S. Amelinckx, D. Van Dyck, J. Van Landuyt and G. Van Tendeloo), VCH Verlagsgesellschaft, Weinheim (1997), p.807

Scanning Force Microscopy

U. D. Schwarz, in:

Handbook of Microscopy (ed. by S. Amelinckx, D. Van Dyck, J.F. Van Landuyt, G. Van Tendeloo), VCH Verlagsgesellschaft, Weinheim (1997), p.827

Magnetic Force Microscopy

A. Wadas, in:

Handbook of Microscopy (ed. by S. Amelinckx, D. Van Dyck, J.F. Van Landuyt, G. Van Tendeloo), VCH Verlagsgesellschaft, Weinheim (1997), p.845

Friction force spectroscopy in the low-load regime with well-defined tips

U.D. Schwarz, O. Zwörner, P. Köster, and R. Wiesendanger, in:

Micro-/Nanotribology and Its Applications, NATO ASI Series Vol. 330 (ed. by B. Bhushan), NATO ASI Series Vol. 330, Kluwer Academic Publishers, Dordrecht (1997), p.233

Simulation of the scan process in friction force microscopy

H. Hölscher, U.D. Schwarz, and R. Wiesendanger, in:

Micro-/Nanotribology and Its Applications, NATO ASI Series Vol. 330 (ed. by B. Bhushan), Kluwer Academic Publishers, Dordrecht (1997), p.379

Friction in the low-load regime: Studies on the pressure and direction dependence of frictional forces by means of friction force microscopy.

U.D. Schwarz, H. Bluhm, H. Hölscher, W. Allers, and R. Wiesendanger, in:

The Physics of Sliding Friction, NATO ASI Series, Vol. 311, 369-411 (ed. by B.N.J. Persson), Kluwer Academic Publishers, Dordrecht (1996)

STM and AFM on CDW and related materials.

R. Wiesendanger, in:

Physics and Chemistry of Low Dimensional Inorganic Conductors, NATO ASI Series B Vol. 354, p. 229 (ed. by C. Schlenker, J. Dumas, M. Greenblatt, and S. Van Smaalen), Plenum Press, New York (1996)

Review Articles

Atomic magnetism revealed by spin-resolved scanning tunnelling spectroscopy

J. Wiebe, L. Zhou, and R. Wiesendanger, J. Phys. D: Appl. Phys. **44** 464009 (2011)

Non-Collinear Magnetic Order in Nanostructures Investigated by Spin-Polarized Scanning Tunneling Microscopy

O. Pietzsch and R. Wiesendanger, Pure and Applied Chemistry **83** 1981 (2011)

Spin mapping at the nanoscale and atomic scale

R. Wiesendanger, Rev. Mod. Phys. **81** 1495 (2009)

Multipolar Ordering in Electro- and Magnetostatic Coupled Nanosystems

E.Y. Vedmedenko, N. Mikuszeit, ChemPhysChem **9** 1222 (2008)

Magnetic sensitive force microscopy

A. Schwarz and R. Wiesendanger, Nano Today **3** 28 (2008)

Non-collinear Magnetism in Quasicrystals

E. Y. Vedmedenko, Modern Physics Letters B **19** 1367 (2005)

Oberfläche zwingt zur Ordnung

E. Y. Vedmedenko, Physik Journal **8/2005** 81 (2005)

Der direkte Blick auf Elektronensysteme

M. Morgenstern, Physik Journal **8/2004** 83 (2004)

Spin-polarized scanning tunneling microscopy

M. Bode, Rep. Progr. Phys. **66** 523 (2003)

Nano- and atomic-scale magnetism studied by spin-polarized scanning tunneling microscopy and spectroscopy

R. Wiesendanger and M. Bode, Sol. State Commun. **119** 341 (2001)

Surface magnetism: from the spin-resolved density of states to magnetic domain imaging on the nanometer scale

M. Getzlaff, Appl. Phys. A **72** 455 (2001)

Nano- and atomic-scale magnetism studied by spinpolarizedscanning tunneling microscopy and spectroscopy

R. Wiesendanger and M. Bode, Sol. State Commun. **119** 341 (2001)

Nanomagnetische Domänen mit dem Rastertunnelmikroskop

M. Getzlaff, M. Bode and R. Wiesendanger, Physik in unserer Zeit **31** 110 (2000)

Nano-scale studies of quantum phenomena by scanning probe spectroscopy

R. Wiesendanger, Ann. Phys. (Leipzig) **9** 895 (2000)

Investigation of the mechanics of nanocontacts using a vibrating cantilever technique

U. D. Schwarz, H. Hölscher, W. Allers, A. Schwarz, and R. Wiesendanger, Proc. NATO-ASI Workshop, Hungary (2000)

Recent progress in high-resolution magnetic imaging using scanning probe techniques

M. Bode, M. Dreyer, M. Getzlaff, M. Kleiber, A. Wadas, and R. Wiesendanger, J. Phys.: Condens. Matter **11** 9387 (1999)

Present and future developments of SPM systems as mass storage devices

A. Born and R. Wiesendanger, Appl. Phys. A **68** 131 (1999)

Surface magnetism at the nanometer and atomic scale

R. Wiesendanger, Current Opinion in Solid State & Materials Science **4** 435 (1999)

Recent advances in spin-polarized scanning tunneling spectroscopy for imaging of magnetic domains

R. Wiesendanger, M. Bode, and M. Getzlaff, J. Magn. Soc. Jpn. **23** 195 (1999)