

AG Kuch
Scientific Activity Report 2007

Scientists:

Abrudan, Radu M. (until 31.08.2007)

Ball, David (from 15.10.2007)

Bernien, Matthias

Charilaou, Michalis (from 30.09.2007)

Chemam, Faiçal (from 08.03.2007)

Eckhold, Philipp (until 30.09.2007)

Kuch, Wolfgang

Kurde, Julia (from 01.09.2007)

Lenz, Kilian

Miguel, Jorge

Ognev, Alexey (17.09.–11.12.2007)

Piantek, Marten

Rocker, Jan (until 31.05.2007)

Stampe, Miriam

Publications:

M. Bernien, X. Xu, J. Miguel, M. Piantek, Ph. Eckhold, J. Luo, J. Kurde, W. Kuch, K. Baberschke, H. Wende, and P. Srivastava
Fe-porphyrin monolayers on ferromagnetic substrates: Electronic structure and magnetic coupling strength
Phys. Rev. B **76**, 214406-1–6 (2007).

S. S. Kalarickal, X. Y. Xu, K. Lenz, W. Kuch, and K. Baberschke
Dominant role of thermal magnon excitation in temperature dependence of interlayer exchange coupling: Experimental verification
Phys. Rev. B **75**, 224429-1–7 (2007).

J. Kienert, S. Schwieger, K. Lenz, J. Lindner, K. Baberschke, and W. Nolting
Mechanism of temperature dependence of the magnetic anisotropy energy in ultrathin Cobalt

and Nickel films

J. Magn. Magn. Mater. **316**, e86–e89 (2007).

W. Kuch, F. Offi, L. I. Chelaru, J. Wang, K. Fukumoto, M. Kotsugi, J. Kirschner, and J. Kunes

Huge magneto-crystalline anisotropy of x-ray linear dichroism observed on Co/FeMn bilayers
Phys. Rev. B **75**, 224406-1–7 (2007).

K. Lenz, S. Zander, and W. Kuch

Magnetic Proximity Effects in Antiferromagnet/Ferromagnet Bilayers: The Impact on the Néel Temperature

Phys. Rev. Lett. **98**, 237201-1–4 (2007).

J. Miguel, J. Camarero, J. Vogel, J. F. Peters, N. B. Brookes and J. B. Goedkoop

Soft X-ray resonant magnetic scattering study of magnetization reversal in low dimensional magnetic heterostructures

Appl. Surf. Sci. **254**, 335–338 (2007).

S. Schwieger, J. Kienert, K. Lenz, J. Lindner, K. Baberschke, and W. Nolting

Spin-Wave Excitations: The Main Source of the Temperature Dependence of Interlayer Exchange Coupling in Nanostructures

Phys. Rev. Lett. **98**, 057205-1–4 (2007).

S. Schwieger, J. Kienert, K. Lenz, J. Lindner, K. Baberschke, and W. Nolting

Temperature dependence of interlayer exchange coupling

J. Magn. Magn. Mater. **310**, 2301–2303 (2007).

H. Wende, M. Bernien, J. Luo, C. Sorg, N. Ponpandian, J. Kurde, J. Miguel, M. Piantek, X. Xu, Ph. Eckhold, W. Kuch, K. Baberschke, P. M. Panchmatia, B. Sanyal, P. M. Oppeneer, and O. Eriksson

Substrate-induced magnetic ordering and switching of iron porphyrin molecules

Nature Materials **6**, 516–520 (2007).

Kh. Zakeri, J. Lindner, I. Barsukov, R. Meckenstock, M. Farle, U. von Hörsten, H. Wende,

W. Keune, J. Rucker, S. S. Kalarickal, K. Lenz, W. Kuch, K. Baberschke, and Z. Frait

Spin dynamics in ferromagnets: Gilbert damping and two-magnon scattering

Phys. Rev. B **76**, 104416-1–8 (2007).

Kh. Zakeri, I. Barsukov, N. K. Utochkina, F. M. Römer, J. Lindner, R. Meckenstock, U. von Hörsten, H. Wende, W. Keune, M. Farle, S. S. Kalarickal, K. Lenz, and Z. Frait

Magnetic properties of epitaxial Fe₃Si/MgO(001) thin films

Phys. Rev. B **76**, 214421-1–9 (2007).

Presentations:

a) invited talks

W. Kuch

Magnetic properties of antiferromagnetic/ferromagnetic thin film systems and paramagnetic

molecules adsorbed on ferromagnetic thin films
Ecole Polytechnique Fédérale de Lausanne, Lausanne (Schweiz), 26.06.2007.

W. Kuch
Exploring the magnetic coupling between antiferromagnets and ferromagnets by photoelectron emission microscopy
Bragg-Stoner Symposium “Magnetism and Synchrotron Light”, Leeds (United Kingdom), 26.–27.07.2007.

W. Kuch
Photoelectron emission microscopy of layered magnetic materials containing antiferromagnets
E-MRS 2007 Fall Meeting, Warsaw (Poland), 17.–21.09.2007.

W. Kuch, A. Grohmann, H. Wende, M. Haryono, M. Bernien, J. Miguel, H. Kämpf, S. Hain, M. Piantek, K. Baberschke, X. Xu, Ph. Eckhold, and P. Srivastava
Paramagnetic molecules on Magnetic and Non-Magnetic Substrates
International Workshop on Molecular Switching on Surfaces, Zeuthen, 23.–26.09.2007.

W. Kuch
Magnetic properties of antiferromagnetic/ferromagnetic thin film systems and paramagnetic molecules adsorbed on ferromagnetic thin films
Max-Planck-Institut für Mikrostrukturphysik, Halle, 09.10.2007.

W. Kuch
Imaging magnetization dynamics by x-ray magnetic circular dichroism photoelectron emission microscopy
ALBA Synchrotron Light Source, Bellaterra (Spain), 20.12.2007.

K. Lenz
Spin Dynamics Detected by Ferromagnetic Resonance
Seminar of the Sonderforschungsbereich 491 “Magnetische Heteroschichten: Spinstruktur und Spintransport“, Universität Duisburg-Essen, Duisburg, 23.02.2007.

b) contributed talks

K. Lenz, S. Zander, and W. Kuch
Néel Temperature Shifts Due to Magnetic Proximity Effects in Ni/Fe_xMn_{1-x} Bilayers
71st Annual Meeting 2007 and DPG-Spring Meeting of the Division Condensed Matter of the Deutsche Physikalische Gesellschaft, Regensburg, 26.–30.03.2007.

K. Lenz, S. Zander, and W. Kuch
Néel temperature shifts due to magnetic proximity effects in Ni/Fe_xMn_{1-x} bilayers
6th International Symposium on Metallic Multilayers (MML ‘07), Perth (Australia), 15.–19.10.2007.

J. Miguel, R. M. Abrudan, M. Bernien, M. Piantek, C. Tieg, W. Kuch, and J. Kirschner
Spectromicroscopy of Fe/CoO coupled layers
III Reunión Nacional de Usuarios de Radiación de Sincrotrón (AUSE), Jaca (Spain),

09.–11.07.2007.

H. Wende, M. Bernien, J. Luo, C. Sorg, N. Ponpandian, J. Kurde, J. Miguel, M. Piantek, X. Xu, Ph. Eckhold, W. Kuch, K. Baberschke, P. M. Panchmatia, B. Sanyal, P. M. Oppeneer, and O. Ericksson

Magnetic ordering and switching of iron porphyrin molecules mediated by ferromagnetic films

71st Annual Meeting 2007 and DPG-Spring Meeting of the Division Condensed Matter of the Deutsche Physikalische Gesellschaft, Regensburg, 26.–30.03.2007.

F. Yildiz, M. Przybylski, F. Luo, C. Tieg, R. M. Abrudan, and J. Kirschner

Magnetic orbital moment and uniaxial anisotropy in tetragonally distorted $\text{Fe}_{1-x}\text{Co}_x$ films

71st Annual Meeting 2007 and DPG-Spring Meeting of the Division Condensed Matter of the Deutsche Physikalische Gesellschaft, Regensburg, 26.–30.03.2007.

c) posters

R. M. Abrudan, J. Miguel, M. Bernien, M. Piantek, C. Tieg, W. Kuch, and J. Kirschner

Spectromicroscopy of Fe/CoO coupled bilayers

15th International Conference on Vacuum Ultraviolet Radiation Physics (VUV XV), Berlin, 29.07.–03.08.2007.

M. Bernien, M. Piantek, J. Miguel, R. M. Abrudan, H. Wende, W. Kuch, M. Haryono, H. Kämpf, and A. Grohmann

X-ray absorption of spin crossover complexes

71st Annual Meeting 2007 and DPG-Spring Meeting of the Division Condensed Matter of the Deutsche Physikalische Gesellschaft, Regensburg, 26.–30.03.2007.

M. Bernien, J. Miguel, M. Piantek, J. Luo, X. Xu, P. Srivastava, C. Sorg, N. Ponpandian, Ph. Eckhold, J. Kurde, K. Baberschke, W. Kuch, and H. Wende

Magnetic ordering and switching of iron porphyrin molecules mediated by ferromagnetic films

III Reunión Nacional de Usuarios de Radiación de Sincrotrón (AUSE), Jaca (Spain), 09.–11.07.2007.

M. Bernien, J. Miguel, K. Baberschke, W. Kuch, H. Wende M. Piantek, J. Luo, X. Xu, P. Srivastava, C. Sorg, N. Ponpandian, Ph. Eckhold, and J. Kurde, and

Magnetic ordering and switching of iron porphyrin molecules mediated by ferromagnetic films

15th International Conference on Vacuum Ultraviolet Radiation Physics (VUV XV), Berlin, 29.07.–03.08.2007.

M. Bernien, J. Miguel, M. Piantek, J. Luo, X. Xu, P. Srivastava, C. Weis, N. Ponpandian, Ph. Eckhold, J. Kurde, K. Baberschke, W. Kuch, and H. Wende

Magnetic ordering and switching of iron porphyrin molecules mediated by ferromagnetic films

26th BESSY User's Meeting, Berlin, 06.–07.12.2007.

W. Kuch, F. Offi, L. I. Chelaru, J. Wang, K. Fukumoto, M. Kotsugi, J. Kirschner, and J. Kunes

Huge magneto-crystalline anisotropy of x-ray linear dichroism observed on Co/FeMn bilayers
15th International Conference on Vacuum Ultraviolet Radiation Physics (VUV XV), Berlin, 29.07.–03.08.2007.

J. Miguel, D. Bayer, J. Sánchez-Barriga, B. Heitkamp, M. Piantek, M. Aeschlimann, H. Dürr, and W. Kuch

Time and layer-resolved magnetization dynamics in magnetic multilayered systems
III Reunión Nacional de Usuarios de Radiación de Sincrotrón (AUSE), Jaca (Spain), 09.–11.07.2007.

J. Miguel, R. M. Abrudan, M. Bernien, M. Piantek, C. Tieg, J. Kirschner, and W. Kuch
Interfacial magnetic domain coupling study in single-crystalline Fe/CoO bilayers
26th BESSY User's Meeting, Berlin, 06.–07.12.2007.

J. Miguel, D. Bayer, J. Sánchez-Barriga, F. Kronast, J. Kurde, M. Aeschlimann, H. A. Dürr, and W. Kuch

Imaging of ps-resolved magnetization dynamics in Permalloy micro structures
26th BESSY User's Meeting, Berlin, 06.–07.12.2007.

M. Piantek, M. Bernien, J. Miguel, and W. Kuch

Adsorption Studies of Different Azobenzene Molecules on Cu(001) and Au(111)
International Workshop on Molecular Switching on Surfaces, Zeuthen, 23.–26.09.2007.

d) presentations for the public

W. Kuch

Die Zukunft der magnetischen Datenspeicherung
Auftaktveranstaltung der regionalen Lehrerfortbildung des Bezirks Steglitz-Zehlendorf
13.09.2007

W. Kuch

Magnetismus: Vom Kompass zum iPod
Schülervorträge des Fachbereichs Physik, Freie Universität Berlin, talk, 05.10.2007.

Degrees:

Philipp Eckhold

XMCD-Spektroskopie ultradünner ferromagnetischer Filme und magnetischer Porphyrin-Moleküle
Diploma degree, Freie Universität Berlin, February 2007.

Jan Rocker

Ferromagnetische Resonanz an Fe₃Si/MgO(001) und nanostrukturierten Co-Filmen
Diploma degree, Freie Universität Berlin, June 2007.

Radu M. Abrudan

Growth, structure and magnetic properties of single crystalline Fe/CoO/Ag(001) bilayers

PhD degree, Freie Universität Berlin, 16.07.2007.