

AG Kuch
Scientific Activity Report 2016

Scientists:

Arruda, Lucas

Bernien, Matthias

Britton, Andrew

Gelen, Ismet (since 20.10.)

Khan, Nadir Ali (16.08.–12.09. and 05.10.–04.11.)

Khan, Yaqoob (11.06.–06.07. and 26.07.–13.09.)

Kipgen, Lalminthang

Kuch, Wolfgang

Nickel, Fabian

Sandig, Oliver (until 30.06.)

Shokr, Yasser (until 31.10.)

Tauqir

Ullah, Izran (16.08.–04.11.)

Bachelor, Master, and Diploma students:

Steinborn, Jannik (12.05.–27.10.)

Kemmler, Lukas (since 20.09.)

Drauschke, Janina (since 18.10.)

Publications:

T. Hagelschuer, Y. A. Shokr, and W. Kuch

Spin-state transition in antiferromagnetic $\text{Ni}_{0.4}\text{Mn}_{0.6}$ films in Ni/NiMn/Ni trilayers on Cu(001)
Phys. Rev. B **93**, 054428-1–6 (2016).

O. Sandig, Y. A. Shokr, J. Vogel, S. Valencia, F. Kronast, and W. Kuch

Movement of magnetic domain walls induced by single femtosecond laser pulses
Phys. Rev. B **94**, 054414-1–7 (2016).

J. Song, M. Bernien, C.-B. Wu, and W. Kuch

Tuning the Electronic Properties of Rotated Graphene on Ni(111) by Nickel Carbide
Intercalation

J. Phys. Chem. C **120**, 1546–1555 (2016).

P. Stoll, M. Bernien, D. Rolf, F. Nickel, Q. Xu, C. Hartmann, T. R. Umbach, J. Kopprasch, J.

N. Ladenthin, E. Schierle, E. Weschke, C. Czekelius, W. Kuch, and K. J. Franke

Magnetic anisotropy in surface-supported single-ion lanthanide complexes

Phys. Rev. B **94**, 224426-1–13 (2016).

Presentations:

a) invited talks

M. Bernien

Magnetism and Light-Induced Switching of Molecules on Surfaces

Kolloquium des Fachbereichs Physik, Freie Universität Berlin, Berlin, 08.01.2016

M. Bernien, F. Nickel, H. Naggert, L. M. Arruda, L. Kipgen, T. G. Gopakumar, J. Miguel, C. F. Hermanns, F. Matino, A. Bannwarth, S. Mühlenberend, A. Krüger, D. Krüger, K. Kraffert, W. Walter, E. Schierle, E. Weschke, R. Berndt, F. Tuzcek, and W. Kuch

Exploring the Photoswitching of Adsorbed Spiropyran and Spin-Crossover Molecules by X-ray Absorption Spectroscopy

Berlin SFB658 Conference 2016: "Molecular Switches and Functional Surfaces", Motzener See, 10.–13.04.2016

W. Kuch

Controlling the magnetic properties of paramagnetic molecules on surfaces

9th Brazilian–German Workshop on Applied Surface Science, Maresias (Brazil), 11.–14.04.2016

W. Kuch

X-ray spectroscopic investigations of adsorbed switchable molecules

French-German Summer School on Molecular switches at the nanoscale, Mittelwihr (France), 04.–09.09.2016

W. Kuch

– Magnetism in reduced dimensions and current challenges for spintronics

– X-ray absorption spectroscopy and magnetic circular dichroism

– Magnetic properties of antiferromagnetic/ferromagnetic thin film systems

– Magnetic domains and magnetic domain imaging

– Controlling magnetic molecules on surfaces

Workshop on Recent Trends in Nanomagnetism and Spintronics, Islamabad (Pakistan), 26.–28.09.2016.

O. Sandig

Movement of magnetic domain walls induced by femtosecond laser pulses

Workshop on Recent Trends in Nanomagnetism and Spintronics, Islamabad (Pakistan), 26.–28.09.2016.

b) contributed talks

L. M. Arruda, Md. E. Ali, M. Bernien, F. Nickel, J. Kopprasch, P. M. Oppeneer, and W. Kuch
X-ray absorption study of thermally-induced electrocyclic ring closure of iron porphyrin molecules on Au(111)

80th Annual Meeting of the DPG and DPG Spring Meeting, Regensburg, 06.–11.03.2016.

L. M. Arruda, Md. E. Ali, M. Bernien, F. Nickel, J. Kopprasch, E. Schierle, E. Weschke, P. M. Oppeneer, and W. Kuch

X-ray absorption study of thermally-induced electrocyclic ring closure of iron porphyrin molecules on Au(111)

9th Brazilian–German Workshop on Applied Surface Science, Maresias (Brazil), 11.–14.04.2016

M. Bernien, P. Stoll, D. Rolf, F. Nickel, Q. Xu, C. Hartmann, T. R. Umbach, J. Kopprasch, J. N. Ladenthin, E. Schierle, E. Weschke, C. Czekelius, K. J. Franke, and W. Kuch

XAS and XMCD of Dy Complexes on Au(111)

80th Annual Meeting of the DPG and DPG Spring Meeting, Regensburg, 06.–11.03.2016.

M. Bernien, P. Stoll, D. Rolf, F. Nickel, Q. Xu, C. Hartmann, T. R. Umbach, J. Kopprasch, J. N. Ladenthin, E. Schierle, E. Weschke, C. Czekelius, K. J. Franke, and W. Kuch

High uniaxial magnetic anisotropy in surface-supported single-ion lanthanide-complexes

8th Joint European Magnetic Symposia (JEMS 2016), Glasgow (United Kingdom), 21.–26.08.2016

M. Bernien, H. Naggert, L. Kipgen, F. Nickel¹ L. M. Arruda, S. Ossinger, T. G. Gopakumar, J. Miguel, C. F. Hermanns, F. Matino, A. Bannwarth, S. Mühlenberend, A. Krüger, D.

Krüger, W. Walter, E. Schierle, E. Weschke, R. Berndt, F. Tucek, and W. Kuch

Light-Induced Spin-State Switching of an Fe(II) Complex in Direct Contact with a Solid Surface

European Conference on Molecular Spintronics (ECMols 2016), Bologna (Italy), 15.–18.11.2016.

L. Kipgen, H. Naggert, M. Bernien, F. Nickel, L. M. Arruda, A. J. Britton, F. Tucek, and W. Kuch

The Optical and Thermal Spin State Manipulation of Fe(bpz)₂bipy and its Derivative Compounds on Graphite Surface

80th Annual Meeting of the DPG and DPG Spring Meeting, Regensburg, 06.–11.03.2016.

F. Nickel, M. Bernien, K. Kraffert, D. Krüger, L. M. Arruda, L. Kipgen, and W. Kuch

Reversible ring-open and ring open and ringopen and ringopen ring-closure reactions of spiropyran molecules in direct contact with a Bi(111) surface

32nd European Conference on Surface Science (ECOSS-32), Grenoble (France), 28.08.–02.09.2016

D. Rolf, M. Bernien, P. Stoll, Q. Xu, F. Nickel, C. Hartmann, T. R. Umbach, J. Kopprasch, J. N. Ladenthin, E. Schierle, E. Weschke, C. Czekelius, W. Kuch, and K. J. Franke

Origin of inelastic excitations in rare-earth based metal-organic complexes

80th Annual Meeting of the DPG and DPG Spring Meeting, Regensburg, 06.–11.03.2016.

c) posters

L. M. Arruda, M. Bernien, F. Nickel, N. Hatter, L. Kipgen, Ch. F. Hermanns, J. Miguel, A. Krüger, D. Krüger, T. Bißwanger, J. Kopprasch, Q. Xu, and W. Kuch
Surface-Orientation-Dependent Spin Quenching of Adsorbed Co Porphyrin Molecules
Italian School on Magnetism, Milan (Italy), 18.–22.04.2016.

L. M. Arruda, Md. E. Ali, M. Bernien, F. Nickel, J. Kopprasch, E. Schierle, E. Weschke, P. M. Oppeneer, and W. Kuch
X-ray absorption study of thermally-induced electrocyclic ring closure of iron porphyrin molecules on Au(111)
French-German Summer School on Molecular switches at the nanoscale, Mittelwihr (France), 04.–09.09.2016

L. M. Arruda, Md. E. Ali, M. Bernien, F. Nickel, J. Kopprasch, E. Schierle, E. Weschke, C. Czekelius, P. M. Oppeneer, and W. Kuch
X-ray absorption study of thermally-induced electrocyclic ring closure of iron porphyrin molecules on Au(111)
Eighth Joint BER II and BESSY II User Meeting, Berlin, 07.–09.12.2016.

M. Bernien, F. Nickel, J. Miguel, L. M. Arruda, L. Kipgen, N. Blümel, D. Krüger, A. J. Britton, E. Schierle, E. Weschke, and W. Kuch
Interplay of magnetic coupling and anisotropy of $\text{Ho}_3\text{N}@C_{80}$ endohedral fullerenes on ferromagnetic substrates
Eighth Joint BER II and BESSY II User Meeting, Berlin, 07.–09.12.2016.

M. Y. Khan, C.-B. Wu, and W. Kuch
Pinned magnetic moments in exchange bias: Role of the antiferromagnetic bulk spin
8th Joint European Magnetic Symposia (JEMS 2016), Glasgow (United Kingdom), 21.–26.08.2016

L. Kipgen, M. Bernien, F. Nickel, L. M. Arruda, A. Britton, and W. Kuch
Thermal and Optical Spin-State Manipulation of Non-Interacting Fe(II) Complexes on Graphite and its Tuning by Ligand Modification
Berlin SFB658 Conference 2016: "Molecular Switches and Functional Surfaces", Motzener See, 10.–13.04.2016

L. Kipgen, M. Bernien, F. Nickel, L. M. Arruda, A. Britton, and W. Kuch
Thermal and Optical Spin-State Manipulation of Non-Interacting Fe(II) Complexes on Graphite and its Tuning by Ligand Modification
French-German Summer School on Molecular switches at the nanoscale, Mittelwihr (France), 04.–09.09.2016

L. Kipgen, H. Naggert, M. Bernien, F. Nickel, L. M. Arruda, A. J. Britton, S. Ossinger, F. Tucek, and W. Kuch
Thermal-, Light-, and X-ray-Induced Spin-State Switching of an Fe(II) Complex Adsorbed on a Graphite Surface, and its Tuning by Ligand Modification
Eighth Joint BER II and BESSY II User Meeting, Berlin, 07.–09.12.2016.

C. Luo, H. Ryll, F. Radu, S. Rudorff, O. Rader, T. Noll, D. A. Tennant, A. J. Britton, L. Arruda, Y. M. Chang, J. Miguel, W. Kuch, R.-M. Abrudan, H. Zabel, G. Woltersdorf, M.

Hollnberger, and Ch. Back

VEKMAG – a new vector magnet beamline in BESSY II

80th Annual Meeting of the DPG and DPG Spring Meeting, Regensburg, 06.–11.03.2016.

F. Nickel, M. Bernien, K. Kraffert, D. Krüger, L. M. Arruda, L. Kipgen, and W. Kuch

Reversible photo-switching of spiropyran molecules in direct contact with a single crystal

80th Annual Meeting of the DPG and DPG Spring Meeting, Regensburg, 06.–11.03.2016.

F. Nickel, M. Bernien, Q. Xu, and W. Kuch

Light-induced ring opening of adsorbed nitrospiropyran molecules electronically decoupled from a Cu(100) surface

Berlin SFB658 Conference 2016: "Molecular Switches and Functional Surfaces", Motzener See, 10.–13.04.2016

F. Nickel, M. Bernien, S. Wrzalek, M. Herder, P. Chittas, K. Kraffert, L. M. Arruda, L. Kipgen, S. Hecht, and W. Kuch

Light-induced ring-closure isomerization of a diarylethene derivate in direct contact with surfaces

French-German Summer School on Molecular switches at the nanoscale, Mittelwihr (France), 04.–09.09.2016

F. Nickel, M. Bernien, K. Kraffert, D. Krüger, L. M. Arruda, L. Kipgen, and W. Kuch

Photochromism on a Surface: Switching of Spiropyran on Bismuth

Eighth Joint BER II and BESSY II User Meeting, Berlin, 07.–09.12.2016.

Degrees:

Shokr, Yasser A.

Interaction mechanisms and magnetization dynamics in ultrathin antiferromagnetic films and their correlation with structure and morphology

PhD degree, Freie Universität Berlin, 19.10.2016.

Steinborn, Jannik

Magnetische Röntgenabsorptionsspektroskopie an EuCOT-Nanodrähten und HoCp₃

Bachelor degree, Freie Universität Berlin, October 2016.